COAL AGE

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YOUR BOSS

The Bosses as well as the fellows who are bossed should read this. Its purpose is to make bigger bosses as well as better workmen.

YOU men who are bossed, you fellows who work under the direction of the other fellow—what is your attitude toward your boss? Do you know how much your viewpoint of him means to your advancement? Have you learned that your success is inextricably woven with his? Or are you one of the cowards of work who have no respect for the boss except when he is in your immediate proximity?

One of the wisest mine owners we know, always asks one question respecting the men his managers recommend for promotion:

"How has that man regarded his bosses?"

He says that a man who has not learned to properly respect his own boss can never make one, and his concern is envied by all the rest because of the kind of men it has for bosses.

There are three things that every one of you who is not yet a boss must learn if you ever want to be one yourself.

1. *Respect for your boss.* Not just an ordinary everyday respect for a superior in position, but a deeper, finer kind of respect—the kind that manifests itself in appreciation of the problems of the job, respect for the patience he shows in his dealings with you, respect for his fairness and firmness, respect for his advice and encouragement. Remember, your boss stands for the company you are working for, and when you lose respect for your boss you have most likely lost respect for the concern; that is, unless you can prove that the man who is boss isn't as fit for the job as you are.

2. *Loyalty to your boss.* Anybody living can be loyal, and there isn't a bigger thing a man can do than to be loyal to something or somebody, but how many bossed men are unloyal? Disloyalty is at the root of all unrest between employers and workmen. The boss and the man he bosses can sleep well at nights if they both practice loyalty. Don't delude yourself about what loyalty to your boss means. It doesn't mean that you must flatter him, or toady, or anything of that kind. Neither does it mean that you are loyal if you do your work honestly and do nothing more. Loyalty is the solid foundation on which real success is builded. Get full of it respecting your boss, and you'll have a different feeling for your work.

3. *Your boss is the signpost to promotion.* If you are any kind of a clerk, any kind of a miner, any sort of a foreman, manager or superintendent, you want to work up and not down. You want a bigger and better job than the one you hold now. Well, don't overlook the plainest thing in your road; your boss is actually the signpost pointing you the way. Generally, you can't get a better job except through your boss; in fact, his job is in most cases the one you are looking for next and ought to be getting ready to hold. The truth is that unless a man can see his boss pointing the way and by hard work and study prepares for the next step ahead, he has no right to expect that job. A boss has got to deliver the goods, and you can't deliver unless you've got the delivery stuff

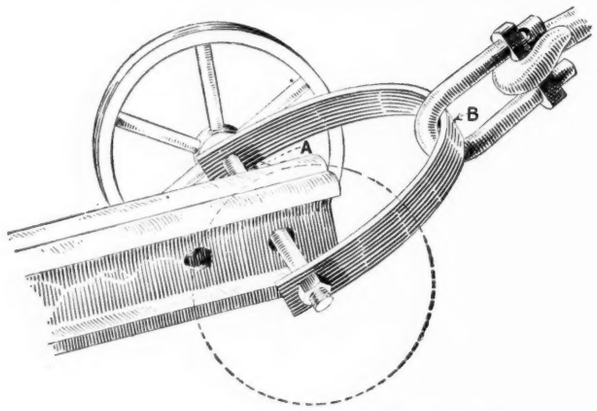
Oh, of course, there's more than these three things to know about bosses. They are not all of the elect Some few get in through the back door of nepotism, favoritism, lodge-ism, religion-ism and so on; but in the main the men who do the bossing are men who have mastered the art of being bossed. The few who are not big enough for the job don't need to worry you.

LOOK YOUR BOSS OVER, Mr. Everyman. Look at the chair he is sitting in and the work he is doing. Are you big enough to fill that chair and do that work? If you aren't, the sight of your boss should stir up a strong desire to grow to Boss size.

Ideas and Suggestions

Method of Packing Rails

The ordinary method of packing rails on muleback, namely, that of fastening the upper ends of three or four rails on each side of the pack saddle and allowing the other ends to drag, will not work on narrow and steep mountain trails, because the dragging ends have a tendency to spread out like a fan. This results in the rails on one side falling off the trail, probably being suspended in space, if the trail is around the face of a cliff, while the rails on the other side interfere with



A METHOD OF RAIL TRANSPORTATION

the bank. In order to overcome this difficulty, the clevis shown in the accompanying illustration was used with success. This was made of ¼ x 1½-in. iron and with an 8-in. span (any similar dimensions will do). To transport the rails, the rod *A* is passed through the bolt holes of several rails laid close together. A chain is then passed through the clevis at *B*, and fastened to the mule. The load of rails may then be dragged over as rough and narrow a trail as the mule can travel. If the trail is not too rough, the weight of the rail may be taken up, and consequently more of them transported at a time, by using a slightly longer rod and a small iron wheel on either side of the clevis. Wheels from old wheelbarrows are just the right size for this work and will stand a great deal of hard usage. Other heavy material, such as large timbers, may also be dragged successfully with this two-wheel arrangement.—*Engineering and Mining Journal.*

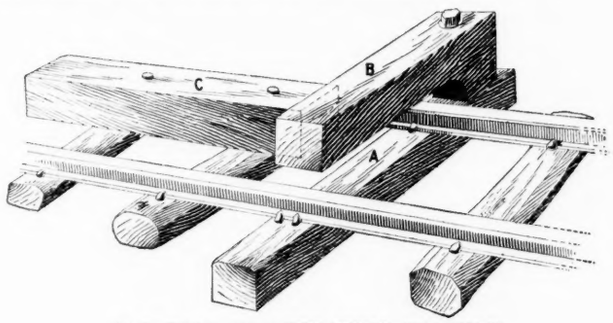
Safety Car Stop

BY S. D. HAINLEY*

Allport, Penn.

The accompanying illustration shows a safety device, or block, to be used at the end of the tipple so as to prevent empty cars from running down the slope.

A is a large railroad tie under both rails, spiked securely and tamped solid. *B* is a piece of 6 x 8 with a ¾-in. bolt through it and the tie *A*. This bolt acts as a pivot, or hinge, upon which the block *B* swings. *C* is another block spiked firmly to the ties between the rails and of such height that the boxes of the cars will not catch upon it. The block *B* rests against this stationary block when the device is in the closed position.



CAR STOP IN OPERATING POSITION

The block is opened for the trip to pass through, and as the triprider rides the last car he uses his foot, giving the block *B* a push, which swings it across the rail and against *C*.

I have seen a trip of seven cars shot over the first knuckle so fast that enough brakes could not be applied to stop the trip, strike this safety block with such force that the first car was sent over the block and the second brought up hard against it. Of course, the first car was derailed, but the only damage done to the block was the impression of the flange of the wheel where it struck the timber. This has happened about a dozen times—and the block can withstand a dozen more.

Catering to the Boss

How far should the officials or bosses of a mine go in social intercourse with their men, during leisure hours? The question is prompted by an incident that came to the writer's attention not long ago. A mine worker was committed to the county prison for a period of one year, on the charge of nonsupport made by his wife. The case would not have been unusual save for the previous condition of the prisoner. He is a skilled miner and has always made above average wages. His downfall may only be attributed to one cause, and that was his extreme liberality in treating the bosses who were in authority over him.

The miner's lavishness excited comment and, as is always the case in a matter of this kind, those who, either from lack of skill or other reasons, were not making as much money as he was, said he was paying for the favorable place he had and was receiving yardage he did not earn.

A spirit of unrest was further engendered among the men by this miner's actions when in the company of those in authority over him. There is about the foreigner the instinctive desire to cultivate the good esteem of the boss by showering him with favors. The American miner, on the other hand, abhors the thought of

this, and the greater number of mine foremen and underbosses should not accept these attentions.

The safe course would appear to be that of meeting these men on their own level and not allowing them to do anything that they might construe as offering them a basis for expecting better treatment than their fellows. How far this idea of favoritism may go in its harmful way was brought home to me by the words of the woman who cleans the office, when she said that it was hard for her husband to get a good place as a miner due to his being an American. It was plainly evident from her remarks that a feeling of canker had been aroused at the colliery by some of the officials accepting little attentions from the foreign class of employees, and that this practice was hurting the morale of the men.

Rosin's Safety Coupling Block

The headman at the Wyoming Five-Foot Slope, Henry Colliery, Plains, Penn., Simon Rosin by name, has schemed out a way of preventing the pinching of his head or leg when coupling cars. A block of wood with a railroad spike driven into the side is used to keep the bumpers from coming together.

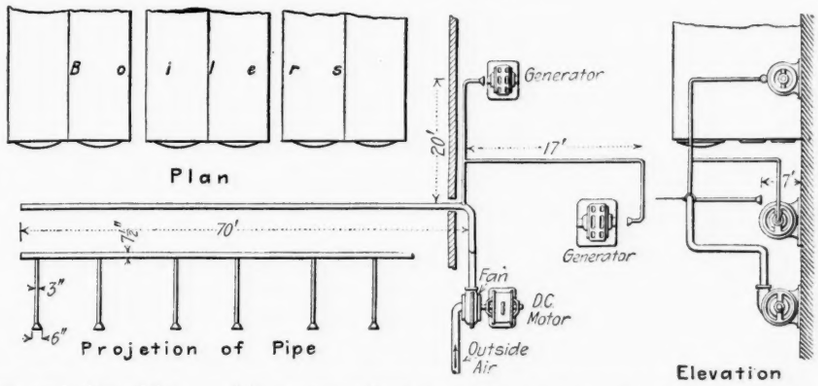
The block is held in place by the head of the spike. Rosin has been using this block for 3½ years and has never had an accident. The Lehigh Valley Coal Co., in its *Employees' Magazine*, advocates the use of this block at all its collieries. Perhaps it will prove useful with cars of a different type.

ROSIN LETS THE BLOCK TAKE THE CRUSH

Boiler-Room Ventilation

The following plan for ventilating and cooling the space in front of a battery of boilers may be of interest. It was adopted by the Big Creek Colliery Co., of St. David, Ill., after it had been found that firemen could not stand the temperature in front of the boilers on a warm summer day.

A 7½-in. galvanized pipe is suspended in front of the boilers and from this main line, 3-in. pipes, also of galvanized iron, are dropped to within about 7 ft. of the floor, one in front of each boiler.

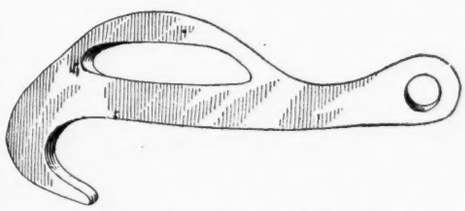


Air is furnished by a No. 4 champion blower, whose capacity is 800 cu.ft. per min. at a pressure of 1½ oz. This is driven by a direct-connected direct-current motor. Air is taken from outside the building. Pipes are also laid to two generators for the purpose of cooling them.

The general arrangement and the dimensions of the pipes are shown on the accompanying sketch. The total cost of the installation was about $200.

Hook To Eliminate Crushed Fingers

John O'Neill, who has been attached to the office of the mining superintendent of the Lehigh Valley Coal Co., has the interesting title "investigator of accidents." It is a pity that there are not more of such useful officials. In the performance of his duties Mr. O'Neill has observed that drivers and runners around the mines often crushed their fingers between the tail-chain hook and the link, or "couple," on a mine car.



USE THE HANDLE AND SAVE YOUR FINGERS

Under ordinary circumstances there is not much danger in hooking up a mule, but some of them do not stop or start with mechanical precision at the word of command. When bidden to go forward to take up a little slack or to maneuver into place, they continue their journey regardless of the driver's "Whoa," and he must either make his coupling on the fly or do one of two things—back the mule several feet or turn him around. In either event he will have to try again to hook him up with like interesting possibilities.

To turn a mule is a troublesome operation, especially in a narrow place, so most drivers make a desperate lunge forward and make the coupling in the short time the mule graciously affords. In so doing the fingers are apt to get caught and the safety handhold on the back of the hook devised by Mr. O'Neill will obviate this possibility. The hook and its purpose are described in the June issue of the *Employees' Magazine*, issued by the Lehigh Valley Coal Company.

Location and Construction of Mine Tracks—II

By J. McCRYSTLE
Minersville, Penn.

SYNOPSIS — *The size, shape and distribution of ties exert considerable influence on the efficacy of a mine track. Tamping, ballast and drainage are also important factors. Steel ties are but little employed except in rooms. The size of spike to be used is determined by the weight of rail.*

THE dimensions of a mine tie should be consistent with the rail and spikes used and the mode of haulage. In order to insure stability, the tie should in no case extend less than 8 in. beyond the web of the rail; nor should it be less than 4½ ft. in length. In addition, the tie should have two parallel faces at least 3 in. wide. The preferred woods are locust, oak, chestnut, hemlock, ash, ironwood, hickory and hard pine.

The number of cross-ties cannot be too great for economy, unless their closeness to each other impedes tamping. This becomes the case when about 40 per cent. of the rail rests upon ties. The spacing of the ties is dependent on (1) the weight of rail selected and (2) the packing and ballast of the ties. It will be recognized readily that if the tie is well packed any increase in the number of ties used for a given distance will increase the strength and stiffness of the rail. Accordingly, if the rail furnished is too light for the traffic, this deficiency may to a large extent be overcome by the use of more ties. A tie must be well tamped before it can be expected to perform its proper function of supporting the rail and load.

Let us assume that in one case the ties used have an 8-in. face and are spaced on 24-in. centers. In a second case ties with a 6-in. face are spaced on 18-in. centers. It is obvious that the second instance has a comparative stiffness 2.37 times as great as the first, or a rail 35 per cent. less in weight could be used and give the same stiffness. It is apparent also that money spent in increasing the number of ties will augment the stiffness of the track more than the same amount expended in rails.

However, this does not take into consideration the extra durability and strength of the heavier rail and the renewal of the ties every two to five years. It must also be remembered that the customary ballast and tamping on mine roads are not of a very high quality. This is especially true inside, where the water washes the ballast from beneath the ties. There is also frequently a total lack of inspection. Too much importance must not therefore be given to the extra tie spacing at the expense of the rail.

Each tie should be tamped uniformly and particular attention given to tamping under that portion upon which the rail rests. Fig. 3 illustrates a case of light ties and improper tamping. Fig. 4 shows the effect on the rail of poor tamping or ballast.

When placing ties at rail joints where angle bars are employed, selected ties of uniform size should be used. These should be so spaced as to give the angle bar sufficient bearing and permit efficient spiking—the rail joint itself to be suspended midway between the ties. The joint should not be directly supported.

Where strap plates or fishplates are used, a selected tie should be placed directly under the joint. This also applies where the rails are butted together and not bolted. The ties should be spaced as close as practical at the rail joint.

The closer tie spacing would seem to be peculiarly adapted to headings where the acid water quickly destroys the rail, the use of the lighter sections with a greater tie frequency recommending itself on account of the low initial cost and its ability to withstand the acid better proportionally than the more heavy rail. There is, of course, also the lesser loss in the event that the rail cannot be reclaimed or is destroyed prematurely.

The use of the steel tie for mine work is generally confined to low veins where height is at a premium. As the usual method is to lay such ties on the floor of the haulageway or chamber without any ballast, the acidity of the water must be given due consideration. If properly placed and taken care of, they will outlast wood ties, especially in chambers where the

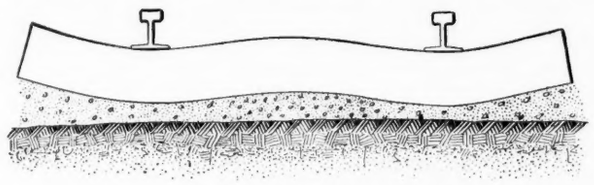


FIG. 3. LIGHT TIE POORLY TAMPED

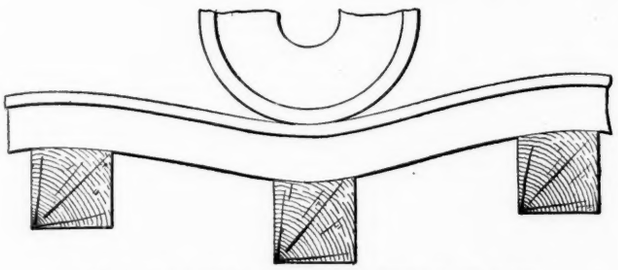


FIG. 4. EFFECT OF POOR TAMPING ON RAIL

frequent removal and relaying of track is the limiting factor in the life of the tie. Some mines use the steel tie interspersed at intervals with wood ties, in the capacity of a tie-rod to hold the rails to gage.

The practice known as "corduroying"—that is, placing additional ties, or laggings, between other ties—should not be employed where it is necessary to reinforce decayed ties or to help bear the stresses of heavier traffic, except possibly where mule haulage is the means of transportation. This practice prevents efficient tamping and impairs the drainage of the roadbed.

For turnout switches, many companies are in favor of having the ties in graded lengths, so as to furnish support and hold in alignment both tracks up to and including the frog.

The ties used in conjunction with wood rail are usually made with notches. These are cut to the gage

of the track, so as to hold the rails and prevent them from tipping or spreading. While it is not always done, it is better to have the bottom side of the tie faced to prevent the tie from turning and the track from creeping.

It is the general opinion that ties will last longer if the bark is removed, and that the hewed tie is more serviceable than the sawed tie. The ties for outside use are usually at least a foot longer than those for underground service.

Hook Spikes

The dimensions of the proper hook spike to employ should be in accord with the weight of the rail and the cross-section of the tie. The weight of the rolling stock does not require, nor will the general run of mine ties permit the use of as large a spike as is employed on standard-gage track.

Where the ties will stand it, the following sizes of spikes are recommended:

Weight of Rail per Yd.	Size of Spike in In. Measured Under Head	Average Number per Keg of 200 Lb.
45 to 70	5½ x 9/16	375
40 to 60	5 x 9/16	400
35 to 40	5 x ½	450
30 to 35	4¼ x ½	530
25 to 35	4 x ½	600
20 to 30	4½ x 7/16	680
16 to 25	4 x 7/16	1,000
16 to 25	3½ x 7/16	900

With such ties as are ordinarily used, however, the 4½ x ½-in. spike will probably be the largest permissible size. In driving the spike, the last blows should be light, to avoid breaking the spike under the head and to make a tighter bind; also, the two inside spikes should be near one side of the tie and the two outside spikes near the opposite side, to prevent splitting. If, when a spike is withdrawn, a wooden plug is driven into the spike hole, the life of the tie will be prolonged considerably.

Unless the spikes are known to be in good condition, it is doubtful whether it pays to remove them when track is reclaimed. They are comparatively costly to straighten, and if they are not in good shape the trackman will likely throw away the poorer ones. Moreover, old spikes are difficult to drive.

Many trackmen, when the ties are to be reused, allow the outer spikes to remain and deliver the ties with these spikes in them to the new location; or when the ties are of no further value, they are burned and the spikes then collected.

There is no doubt that with the majority of mining companies there is a vast waste in the consumption of spikes, and if a check is kept on the amount of track laid this can be readily verified. Usually it will be found more economical to distribute the spikes in a systematic manner than to spend too much time on their reclamation. A good practice is to have someone who is conversant with the needs of the different workmen oversee the distribution of the spikes.

Angle Bars and Fishplates

When a locomotive or a trip of cars runs on rails, a wave of elasticity precedes it. The object of the joint fastening should be to make this wave continuous across the joint. The ideal rail joint should have the same strength, stiffness and elasticity, both vertically and laterally, as the rails which it joins.

That the angle bar is much superior to the fishplate in achieving this object will be apparent from a study of the two. The strap plate and the simplest forms of angle bar are the only types employed for mine tracks.

In Fig. 5-A is shown an angle bar properly placed with the rail gap suspended between the ties. By this arrangement the stress at the joint, where there is always more or less pounding from the traffic, is distributed upon two ties instead of one through the bridging action obtained from the shape of the angle bar. The stress at the joint is transmitted to this angle bar in such manner as to produce tension in the lower, or angle, portion of the bar.

If a tie is placed directly under the joint, as in Fig. 5-B, and it becomes depressed or battered, which it will in a short time, the rail is compelled to bridge between the adjoining ties, thereby doubling the span and inviting a long dish in the rail that the angle bar can but poorly prevent, having no support and virtually carrying the tie that should uphold it.

While the foregoing may appear to be a needless explanation of self-evident facts, it is none the less true that this matter is often suffered to go by default. At some mines where angle bars are used great pains are taken to insert a tie directly under the joint spanned by the angle bar, and any good effects expected to accrue from the use of this type of rail connection are thereby lost.

Tie-Plates and Rail Braces

Tie-plates and rail braces have had a restricted use on mine tracks, although there are many locations where they might be employed profitably.

Frequently the flange of the rail wears to a paper-edge and the rail must be removed, although the head may be but little worn. This is due to particles of grit existing between the rail and the tie. By observing

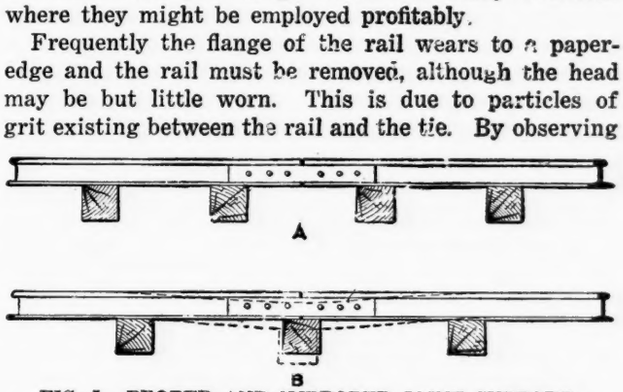


FIG. 5. PROPER AND IMPROPER JOINT SUPPORT

a train of mine cars being drawn by a locomotive, a considerable side motion will be perceived. This side motion tends to force the rails outward as each car passes, the elasticity of the rails returning them to their original position. In time, a groove is worn in the spike, allowing a still greater motion to the rail, and when grit accumulates under the flange the rubbing of the rail on the grit grinds away the flange.

The use of tie-plates, which, in their simplest form, are merely plates provided with spike holes and an offset that resists the thrust of the rail, prevents this motion and consequently the wearing away of the flange. The tie-plate holds the spikes, so that to obtain any side motion it would be necessary to force both spikes, while the offset in the plate prevents cutting the groove in the spike. The tie-plates purchased from a manufacturer are further strengthened by having the bottom of the tie-plate cut so as to resist any sliding motion.

The tie-plate can also be used to advantage on track where the heavy traffic forces the rail into the tie and at intervals compels adzing the tie to give the rail a true bearing. The cutting of the steel into the wood under the rail soon destroys the tie.

The amount of labor, taken in conjunction with the cost of the tie, the preservation of the rail achieved and the inconvenience entailed in doing this work, and operating upon a defective bearing, will afford a figure from which may be judged when and where tie-plates are an economy. It must also be remembered that the plate, properly handled, should last indefinitely.

The application of rail braces should be limited to those curves that are difficult to maintain in gage. The braces prevent the tipping and the spreading of the rails and protect the tie. It should not be necessary to use both tie-plate and rail braces on the one location.

Roadbed and Ballast

The best ballast that can be procured will be of little avail if not properly tamped. If a tie is unsupported, it is but an added weight on the rail. The materials in general use for mine-track ballast are cinders, slate or vein refuse, slate from the breakers and broken rock.

The broken rock affords the best drainage and service, but on account of its high cost is little used for ballast around surface mine tracks. In tunnels and rock headings or gangways the smaller rock made when excavating is sometimes thrown to one side to be used as ballast. Any lump should be broken to a size that would pass through a 3-in. ring. Where there is much traveling, the track should be given a light surfacing of ashes. The material usually employed for ballast is cinders. It is generally procured readily from the colliery boiler plant and affords fair drainage and a fair degree of service. The ashes, if kept in close contact with the rail, will hasten its corrosion.

The refuse from the beds, or veins, is almost without exception of a friable nature and disintegrates rapidly, forming dust or mud. It affords poor drainage and is washed easily from the roadbed. If dry, the passage of the cars swirls the refuse into the journals of the car and dries up the lubrication. It becomes mixed with the coal, and in bituminous mines would be a factor in a dust explosion. Altogether, it is short-sighted economy to use this material for ballast.

Coal and Slate Make Poor Ballast

Breaker slate is sometimes used for ballast. It affords a fair roadbed until it disintegrates and becomes dust or mud. Coal is a very expensive and inefficient ballast.

Where practicable, there should be at least 3 in. of ballast beneath the ties; it should be well tamped, particularly under the portion of the tie supporting the rail. The ditch should be sufficiently deep to drain the roadbed and thereby assist in preventing the decay of the ties. The drainage ditch should be driven with the heading, where necessary, and maintained clear of obstructions or accumulations.

As it is quite difficult to secure a good roadbed, or track, where this is a part of the work of the miner driving the opening, and since it is inconvenient to furnish proper ballast to supply his immediate needs as he advances, it will usually be found advisable for the trackman to go over the completed work at intervals.

(To be continued)

Suggestions on Thin-Coal Mining

By J. F. K. Brown
137 McGill St., Montreal, Can.

SYNOPSIS — *Thin coal is usually mined at a disadvantage as compared with thicker beds. Some of this disadvantage is inherent and cannot be overcome. The use of cutting machines and conveyors and the careful balancing of machines, methods, transportation equipment and men may, however, do much to render the thin-coal operation a success.*

I BEGAN my mining experience as a surveyor's assistant in an 18-in. coal bed. I never saw a coal measure above 3 ft. in thickness until 10 years later. I have lost and made money in the operation of a 16-in. coal. I have witnessed the use of a coal-cutter engine built in 1884 for an entirely different purpose and was present at the initial trial runs of three forms of conveyor now in use in thin seams. With these credentials I hope that the following remarks out of past experience will be found worth reading.

Looking back on the days of 1898 and the operation of that 18-in. coal bed, mined at that time by hand and in competition with thicker coals from other districts, the wonder is that the operation even paid expenses. Our hats have to be removed to the old-fashioned manager who did better than merely pay the bills presented, for by efficient operation he succeeded in returning to his company a profit on its investment.

It is true that wages were much lower then than they are now and that the amount of capital required was less, still, as the other competitors had the same advantages, we have cause to wonder at the showing on that thin-coal bed. The following figures taken from old notebooks are given as showing the changes in mining costs and capital that have taken place from that day to this. They represent the cost of coal cutting in a thin bed at an early date and also give the cost of the capital involved. Perhaps the reader will find them of some interest.

COST OF PLANT (ESTIMATED FROM PRICES GIVEN)

June, 1880; Gartness Colliery; coal 18 to 24 In.

One pair horizontal air compressors, 20x42-in. steam and air cylinders, complete	$3,500
Foundation and engine house, erection	1,000
One egg end boiler 30x5½ ft., complete with mountings	550
Foundations and erection	175
Air receiver (old boiler)	150
Cast-iron air pipe 7½ to 3 in. in diameter, 78 tons at $30 per ton	2,340
Bolts, nuts and joints for same	520
Two Rigg & Meiklejohn coal cutters	2,000
Hose and connections	80
Labor and sundries	500
Total	$10,815

The above was an estimate based on prices given for machinery and plant. The actual cost when the plant was completed came to $11,817.98.

COST OF OPERATION

	Cents per Ton
Coal cutting	8.25
Getting down coal	6.00
Loading and backing	16.75
Brushing and bringing down rock	7.75
Haulage from face to engine plane, 600 ft. on average	7.50
Endless rope to mine-shaft bottom	1.76
Labor at bottom of shaft	.60
Oversight and repairs	3.08
Expense at headframe, surface and loading	3.12
Royalty on coal	6.00
Office and general charges	18.80
Total cost of coal, f.o.b.	79.61

In thin-coal mining the greatest obstacle to be overcome is dealing with the surplus rock. In order that this operation may be conducted efficiently, that mine cars of reasonable size may be used, that men may have room to work in and animals space in which to travel, it follows that there always will be a certain amount of rock to be removed. The breaking down and removal of this material, together with the increase in rates due to time spent in unproductive work in actually getting the coal, is the cause of the increase in cost.

Again, since all other operations in the mine—haulage, hoisting, overseeing and coal getting—are presumably at their maximum efficiency in the thicker coal, the thin-coal miner cannot expect to obtain relief in those directions. Actually, he does in some respects, but theoretically he should not. Finally, he has found through trial and elimination that there are roughly four ways of distributing his burdens so as to bring his operations within reasonable economic limits: First, he endeavors to have the proprietor of the coal lands bear a share, by asking for a lower royalty based on the idea that there should be an allowance made for the thinness of his coal; second, he pares and shaves down on his capital, sees that he has no loose ends and pays for his coal on low royalty basis instead of outright purchase; third, he tries to increase the quality of coal produced; fourth, he adopts the principle of intensive coal production.

Only a Big Output Can Meet Costs

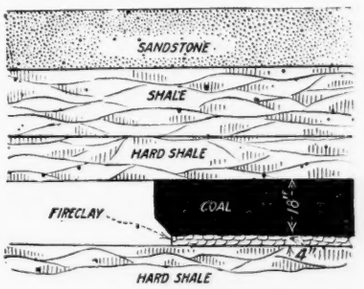
Actual coal getting has little to do with the first two. These are matters that are commonly settled before consideration is given to the mere fact of operation. But in the last two there is scope for the ingenuity of all the mining engineers on the continent. Consideration of these can be carried out together.

One way of decreasing a cost in coal mining is to mine more coal; that is, such items as overseeing, management, maintenance, haulage, hoisting, pumping, etc., would undoubtedly show a lower cost per ton could more coal be set against them. All these factors as worked out in cost figures are influenced by area as well as by tonnage. This means that if we could have all the coal being produced brought out of one district instead of several we would get a lower figure on these items which would offset an increase in other directions. This is what the thin-coal operator tries to accomplish by intensive mining.

Another feature makes its appearance. Logically the best place to get rid of any waste product is at the point of production, which in this case is the coal face. Here, again, the concentration of the operating forces within a small area leads to a lessened wage bill.

It is certain that the economics of the hand-mining system will not provide this desired cost reduction at these two points, and so the hope of the thin-coal miner lies in the extended use of machine mining. No matter what type of machine mining is adopted it calls for concentration of output in one section, and thus at one blow it gives the desired advantages of intensive mining. Machine mining is not to be understood as applying merely to coal cutters. There is a broader viewpoint than that.

By machine mining four important things are accomplished: There is concentration of the output at relatively few points, the tonnage of coal is increased, for an equal operative force, the average price obtained may be increased, and the quantity of rock is less. All four advantages are not obtained with every class of machine mining, and the adoption of any one system with each of its special advantages will depend upon the local conditions which largely fix the method of operation. Methods of machine mining are fairly well understood, one system more so in one district than another, but on the whole knowledge of the operation of different methods is well distributed. What, however, is not so well understood is the organization of machine mining, and yet it is through this organization that most of the hoped-for economies of the system as applied to operation in thin coal are to be obtained.



GARTNESS COLLIERY WORKS THE UPPER DRUMGRAY SEAM, A MERE "PENCIL MARK"

It is quite possible with the advice of the machine makers to buy equipment that will suit the underground conditions at the coal face, but the organizing of all the factors that make for successful operation of a mine to the new conditions created by the advent of the machine is a subject conveniently forgotten by the seller of the apparatus, and often not considered by the operator. To buy equipment without looking into this question is much like purchasing an automobile for which gasoline cannot be readily procured. Consequently, organization and reorganization of the mine are the most important factors in the thin-coal man's success. They are of relatively more importance to him than to his thick-coal neighbor. Consideration of the following table will serve to more clearly illustrate this point.

CONTRAST OF HAND- AND MACHINE-MINING CONDITIONS

	Under Hand Conditions	Under Machine Conditions
Tons	100	360
Number of roads to be kept open	18	18
Tons per road	6	20
Men in section	40	59
Timber to handle, single pieces	3,000	12,108
Cars of coal	100	360
Rate of advance, inches	12	42

It is evident at once that the greatest feature is the traffic increase. Instead of 200 cars a day to deal with there are now 720, besides an additional number at night. Instead of 3000 pieces of timber to take in there are now 12,000 to supply. Other supplies have increased due to the use of the machine, and with

hte increase in traffic, ventilation of the mine workings has to be maintained at a higher state of efficiency.

Therefore organization is to the thin-coal operator a most important factor in success. The finest and best machines in the world may be worthless if the system of backing them up fails. Ordinarily in all coal sections the amount of work done is limited or controlled by one single factor. This may be the amount of cars provided, the size of the section or the

Morgan Colliery.

Daily Machine Report Date..... ....

Section No..... Time reached face.....

Started work	Stopped	Remarks.

Time left face..... Sign here.....

FORM FOR KEEPING TRACK OF MACHINE SERVICE

capacity of the outside haul. In machine mining only one thing should control the section, and that is the tonnage produced at the face each night. Everything should be subordinated and coördinated thereto.

Whatever may be the tonnage produced in the face or in the section during one night's cutting that coal must be cleared away during the next day. Failure to attend to this point means the partial or complete loss of the next day's output and the disorganization of the succeeding day's work. Consequently everything—the number of cars, their arrival at the proper time, the sending in of supplies, timber, stores, extra men and oversight of the work—has to be synchronized with the speed set by the coal cutters.

As the supply of cars has to be steadily maintained and properly distributed throughout the day, always edging the supply around the section in the direction taken by the cutters, so that the places cut first the next night will be the first cleared of coal, a time schedule in maintaining that supply is extremely useful. This provides a means for keeping everybody up to the mark, enables a delay to be noted and overcome promptly, and assists in the proper arrival of supplies.

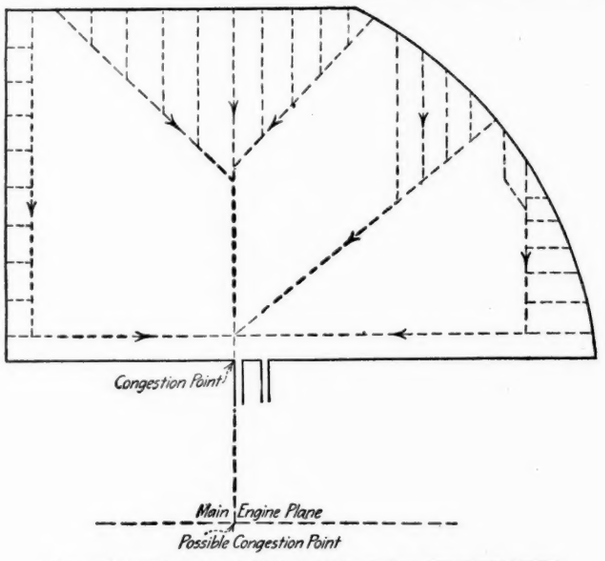
To timbermen there is probably nothing more exasperating than for them to be told at the beginning of their shift that their timber is a mile out on the haulage road, as it did not get in before the rope stopped. If it has ever fallen to your lot to clear an empty road of its cars in order that one special load may get the right of way, this point will be appreciated. Some allowance has to be made for unusual occurrences, but provided the schedule is adhered to all supplies will get in on time, which should be in the afternoon, after the morning rush of coal is over, and yet not too late for work. It is unnecessary to crowd in the timber in the early forenoon when all labor is busy helping to get a good start on clearing away coal.

To get a good start is also important, but not from the point of view that it is better to get all the coal during the early hours, as this is not correct, but because men nowadays like to get started at once and do not care to wait around for an indefinite time before cars appear. They would rather go home. A time schedule helps in this respect, because it assures that a certain number of cars are always left at certain places in the mine where they are ready for the beginning of the next day's run.

A plentiful supply of cars must be on hand. Again, a time schedule helps here, because it prevents the bunching of cars at various outgoing spots; but no time schedule in the world will offset the disadvantages of a poor car supply. Any one who neglects to calculate the number of cars required to carry away the increased tonnage produced in machine mining will find it impossible to secure the results that should accrue from the use of machines.

Since it follows that the tonnage of coal is increased, each stretch of road and each collection point must be increased in capacity in accordance with this rise in car service. Like a poor car supply, it is useless to mine coal by machinery if along the road there is some place that cannot handle the greater number of cars. This point, if it exists, may be the engine plane itself, where because of the demands of other sections the machine section is neglected. Or it may be the haulage to the engine plane that is at fault. The trips may be too few or the capacity of the locomotives, horses or rope too low. Irregular arrival of cars is equally bad. This leads to irregularity of output and thus disrupts the system.

Some extra loaders should always be at call, and to procure them some other places in the mine may be allowed to suffer. These men are necessary in the event that some of the machine places or part of the face remains unloaded out. They may be nightshift



ALL CONGESTION POINTS MUST BE ELIMINATED

men commencing loading at the end of the shift in order to get the coal cleared away before the machine comes along, in which case an extra supply of cars must be sent in. It is useless if there is coal to be loaded in this fashion to have these men fill up all the empty cars immediately available and so create a full section in the morning, which in turn means that the next day's loaders have to wait some time for cars. Should any loaders fail to turn out in the morning, their places must be filled at once. Should there be

probability of any delay, men from other places should be put into the vacant places nearest the beginning of the machine's run.

All these changes in roads, gathering points and increase in capacity of haulageways and engine planes should not be carried out after the machines are installed. On the contrary, they should be planned in advance, so that when the machine does start it will do so under the best conditions and with a minimum of trouble. Worries enough will develop in the machine places or in the machine face without the addition of others somewhere along the road.

That type of machine section which requires the attention of all the bosses racing and rushing about, swearing and trying by sheer brute force to hammer things into shape, that type of machine section which requires double shifts night after night to clear away coal left behind by the day shift and to get roads in order, should have no place in the well-ordered and well-planned mine.

"What We Do," Not "How Much We Worry" Counts

Before all this organization and the need for it was properly understood it used to be common to see the machine men go down at five in the evening and come up at seven in the morning, 14 hours in all consumed in the endeavor to get over the face in one night. A night shift might also be down from six to midnight clearing up a choked section.

Strings of cars blocking up every gathering point, and standing in twos and threes at the bottom of every road, all full of coal, should not be countenanced. For one thing, it delays the night men greatly and, in the second place, it means work that has to be done in the morning before coal-getting, which is the proper business of the day, can be begun. Never leave for tomorrow anything that can possibly be done to day is a mighty good motto in machine mining.

Before the men leave their places on the face, the coal should all be squared up properly so that the machine can get to work promptly. If there is any coal left behind not cleared up, broken down but not loaded, or "noses" overhanging, a man should be sent round in advance of the machine to see that all these obstructions are cleared away. This extra cost is more than offset by the gain made in the time of the machine, as well as by the elimination of the risk of the possible loss next day.

The tracks by which the machine travels from place to place should be so arranged that the time lost in travel is reduced to a minimum. In a thick coal, where the machine cuts a relatively high tonnage in each place, there is more coal to set against this waste; but with the thin coal this lost time runs up alarmingly, because the amount of coal in each place is small.

It is obvious that all machines are doing their best work where the going is continuous. Idle time and idle men, or those employed on unproductive work, spell a loss. It is in the thin coals, therefore, that the longwall cutter has the advantage over the room cutter. With the longwall machine the operation of cutting is continuous; there is one long face to traverse, and coal is being cut all the time the machine is moving. The act of traveling from place to place results in the loss of a certain amount of productive cutting time, and it should therefore be cut to the minimum. Tracks and curves should be easy and well placed, so as to facilitate traveling, and trouble in this connection should never occur twice running at the same spot. Nightmen should be at work on the bad piece of track that same evening.

Time is lost in coal cutting from other causes than traveling, and some of these causes are not always underground troubles. Power disturbances may appear or other surface difficulties develop. In order that these may be dealt with properly and promptly located and remedied, all machine sections should be connected to the surface by telephone, which should not be a mile out, but right in the section. There should be no place in machine mining for the spectacle of a machine crew sitting down waiting for power and the surface men doing the same thing, wondering what is wrong with the machine, while somewhere in between the night manager and repairmen are enjoying a well-earned dinner with a good conscience. A few such experiences soon teach the value of communication, and prompt communication at that.

Machine supplies should be kept handy to the face. If the section is a long one, supplies should be kept at several points. Tool chests with proper keys should be provided, otherwise the oil is often found to have disappeared, together with necessary hammers, keys and similar tools. Machinemen should be capable of making reasonable repairs themselves, and the materials for doing so should be kept on the ground.

Machines Must Be Kept in Cutting Condition

There should be no hard and fast rule that only electricians are to repair machines, neither should every handy man be allowed to try his hand at machine troubles. It is a good thing to have spare machines. Each of the machines underground should be taken to the surface at regular intervals for overhauling. Hardly any class of machinery, unless it is the pumps, receives worse usage than does the coal cutter, and in the dark and poor light underground defects may develop that will never be noticed until it is too late to make the proper repair. All machines should be operated steadily on the surface for a number of hours and thoroughly oiled and tuned up before being returned within the mine.

Machinemen should be at their machines an hour or so before the time of starting work, in order that each cutter may be overhauled and oiled, the bits changed, and all such details given the proper attention. Spare bits should always be on hand and any that have been removed should be sharpened in the morning, to be sent down again at night. The proper place for all bits except those in stock in the warehouse is in the mine and not in the blacksmith shop. One smith should sharpen all these tools the first thing in the morning, regardless of any other work. It should never be necessary to stop the machine to hunt for cutters or telephone to the surface at two in the morning.

Where conveyors are at work, either in conjunction with machines or separately, they generally run during the day. They have the effect of bringing about a concentration at certain places even greater than that due to machine mining. Instead of 360 tons being loaded onto cars on 18 roads, it may all be loaded

onto cars at one roadhead. Obviously, that roadhead in order to handle 720 cars, has to suffer some alteration in design. What is necessary is speed in handling, and to get this, space is required.

The road to which the conveyor delivers its coal should be double tracked and kept a considerable distance in advance of the conveyor face. This allows a stream of empties to pass constantly under the lip of the conveyor. In addition, there should be considerable gathering room, and loaded cars should be promptly removed. It is easy to imagine the confusion and ultimate loss of time that would result should the coal not be taken away. A delay of this sort affects the whole section, and everybody stands still till the trouble is removed.

Machine Work Should Have Machine Regularity

Rerailers should be placed on the tracks leading to every machine section, and there should be a rigid inspection of cars. No car with a defect that is likely to be the cause of a wreck should be allowed to remain in operation. In such work the trips are long, heavy and frequently run fast. These are unavoidable conditions, and a wreck under such circumstances is worse than one in a slow-going haul elsewhere. The projection of this haulage road beyond the line of the conveyor face should be provided with an easy switchover, and at the same time one that can be readily lifted and relaid. Some conveyors load alternately, first on one road and then on the other. A rear switchover is also required in those cases.

Above all things adequate height should be provided at a conveyor head as well as a string of electric lights. Space and light are the first essentials where fast work is required. Where a man has room to move and stand upright, he is able to bring the cars forward rapidly; and if any go off the track full or empty, they are more easily replaced. Adequate lighting is an advantage, but it should be remembered that what is wanted is light and not an apology therefor in the shape of bulbs at such intervals as to make the darkness more pronounced than ever.

The total length of any conveyor face, coal face or machine section should never be greater than a machine can cut, nor greater than the provision made to take the coal away. These things have to be balanced. It is just as bad to have a perfect outside organization and little coal to justify it as it is to have coal and no means of properly taking it away. Getting that balance is what is called organization. This demands that there should be more specialized work in a machine face than is generally the case in coal mining. Certain men should be responsible for certain duties, although this can certainly be carried much too far. In the old days miners and daymen were employed; nowadays it is machinemen, loaders, timbermen, trackmen, conveyormen, repairmen, and sometimes rockmen. It is hard to keep so many men with diverse duties all operating unitedly to a common end.

The timber supply should always be plentiful and be kept coming in a constant stream. It should be stored at convenient points. Do not have the section cluttered up with timber, and equally important is it not to have to send to the surface for certain pieces whenever they are needed.

Except for the necessary daily timbering, it is better in machine work to have special men who are accustomed to the ways of the machine, to timber the places or the face. They know exactly where to place the timber so it will interfer least with the cutters, and thus save the time of the machinemen in setting and resetting props and bars. Above all, as they are the regular timbermen, these men know where the timber is and the extent of the supply in each section. If the section and the type of working permit it, a system of regular timbering should be worked out and adhered to. Not only will this have a tendency to decrease accidents, but it enables the roof to work more regularly and so avoids the burying of the machine.

Timbermen should start some time before the machinemen begin their work so that they may get well in advance of the cutters. In some mines where the timbering is heavy the timbermen accompany or follow closely behind the machine and see that each place is properly protected. These men should always work in pairs, not one start at one point and another somewhere else. This is a common sense precaution. In a conveyor face the timbermen and the gang that shifts the conveyor are usually the same men, since shifting a conveyor is ordinarily an operation of drawing and resetting props.

Machinemen, conveyormen and inside foremen should fill out detail reports daily, making special comment on reasons and causes for delays. These reports form a most valuable means of keeping in touch with the progress of the work and aid in checking trouble. The reports that are made out during the night should be available for the shift going on in the morning. All reasons for any delay should be noted, the time lost, the hour of stoppage and the time at which a start was again made.

Conveyor Was Slacking 40 Per Cent. of Time

In a recent run of two longwall machines followed by a conveyor, when operation was in its early stages, it developed that only 40 per cent. of the time on the conveyor and 35 per cent. of that on the cutter was actually employed in doing useful work. The rest of the time was wasted in attending to coal in the road, no cars, no power, and sundry other troubles that should never have occurred. That percentage may give some idea of the amount of time that it is possible to throw away by needless inefficiencies in mine management.

Under normal conditions a longwall coal cutter will travel at the rate of 11 in. a minute. In a 250-ft. face this means that only about 4½ hours is required to do the cutting. The remainder is time spent in waiting for one thing or another less a reasonable allowance for changing cables and other work that is essential to the operation of the machine itself. Work that is not essential to the cutter should be charged elsewhere, and represents a loss, because the machinemen are then doing work that others should have done.

There is a considerable difference in the means whereby cost is reduced in a coal-cutting section and in conveyor sections. Coal cutting is a method which endeavors to accomplish that object by the production of an increased tonnage, while conveyor work tends toward the same end but through a direct reduction in cost of operation.

With coal cutters there are so many roads to be kept brushed and packwalls to be built therein every night, that a considerable squad of men often has to be employed at that work. With the increased rate of advance of the face this work has to be done nightly instead of every third night. Consequently, it is necessary in such a section to see that the rockmen arrive on the work early, that their special supplies are always on hand, and that they have a number of spare cars sufficient for their work. It is, of course, impossible to completely clear the section of all cars on the roads, but there should be some system adopted to deal with this condition, because machinemen and timbermen often have to run loads around the district.

With the use of conveyors rockwork is much reduced, since a great number of the roads are eliminated. Most lifting is then done in the roadhead to which the conveyor delivers, where rock has to be removed over the width of a double roadway for the use of the double track below the level of the lip of the conveyor. The conveyor shifting squad can do this work.

The provision of adequate power seems so evident that it would appear to be mere repetition to once more state its necessity. Nevertheless it is true that many of the old-coal-cutting plants failed in this vital particular. Not only was the actual power ability of the coal cutter too low for the work, but there were also other demands on the plant, with the result that the coal cutter, miles away below ground, stalled.

The amount of power required or consumed by the cutter is variable. Where it is easy going it is normal in demand, but wherever the cutters tend to stick, the demand for current rises. This means sudden excess loads, and to provide therefor and at the same time take care of the other machines on the same supply line there should be a surplus available.

In general, machine mining should not be considered as a remedy for any or all the evils that may beset the thin-coal operator. But if it is well planned and operated with a modicum of common-sense, it holds out to the thin-coal operator the one road to successful competition with his thick-coal neighbors.

Importation of Chinese Coal Miners

By P. L. MATHEWS
Santo Tomas, Texas

SYNOPSIS—*Chinese employed in Mexican mines have proved efficient miners. Industrious and frugal, but do not assimilate and cannot be expected to make good American citizens. Importation in large numbers not a lasting benefit, as shown by a concrete illustration. Why not employ Mexican miners?*

THE timely suggestion made by the editor of *Coal Age*, in his Foreword, July 21, in regard to importing Chinese miners will no doubt strike a responsive chord in the breasts of many mine executives who are at their wits' ends to stretch an inadequate labor supply so as to meet the overwhelming demands for a greater production of coal.

On the surface it must be admitted that the idea has many attractive features. In the first place Mr. Parsons is correctly informed that the Chinese make good miners. The writer can vouch for this, at least to some extent, from his limited experience at some coal mines in Coahuila, Mexico, where about 500 Chinese miners were employed. They undoubtedly proved their efficiency at this place, and in point of industry, dependability and output per man, from his observation, they were superior to either the Japanese or Mexican labor, which was also employed in the same field.

In the opinion of the writer there is no doubt that Chinese laborers could be readily and quickly adapted to coal-mining conditions in the United States; and, while their importation would in all probability prove a great benefit in the present emergency as far as additional output of coal is concerned, there are other features of the scheme which call for serious consideration.

There is no question but that the Chinaman is industrious, frugal and commercially honest. Any Occidental who has had occasion to deal with the Chinese is strikingly impressed with these almost universal characteristics of their race. While these virtues could be imitated to advantage by any race, irrespective of color or nationality, yet they cannot be said to constitute the most important desideratum that the United States wishes in its immigrants.

The Chinaman is first, last and always a Chinaman. While the statement may be open to criticism, yet it is not too much to say, perhaps, that no amount of association and education would ever amalgamate his ideals and aspirations with the standards that characterize the white race. We might work with him in the industrial and commercial world, in complete harmony for a thousand years, yet the fact would remain that he is an element that will not assimilate in the melting pot of America. Furthermore, the idea that he should weave himself into our social fabric is probably as repugnant to him as it is to us.

Therefore, while it is true that the services of the Chinaman would be valuable to us in the coal-mining industry, in the present crisis, it is also true that his importation in large numbers would inject an element into our population which would prove to be entirely incompatible with American sentiment, customs and tradition—an element that would never make American citizens, in the sense that they could intermarry with our people and become an established and permanent part of our population.

This means that in those mines where he would be used, it would be necessary to segregate the Chinaman, both in his working and living places, and undoubtedly his entrance would be fought to the utmost by nearly all classes of labor. Supposing, however, for the sake of argument, that Chinese are imported and the antagonism of labor circumvented by placing them in separate mines. While no man can accurately predict how long this war will last or how long the labor shortage will continue, conceivably there will come a time when con-

ditions will adjust themselves and present us with the problem of say 20,000 Chinese miners whose services are no longer wanted and whose presence in the country is undesirable. It is conceivable that it will be considerably more difficult to get rid of them than it was to get them here.

Looking at the problem from the viewpoint of the benefits of an increased output, let us assume that 20,000 Chinamen are immediately available for importation as miners into this country. Using the statistics for 1915 ("Coal in 1915, Part A, Production." by C. E. Lesher; "Mineral Resources for the United States") they would increase the output 794 tons per man per year in bituminous mines, or 15,880,000 tons. This amount represents 3.58 per cent. of the total production of bituminous coal in 1915.

Entire Industry Not Benefited

If these 20,000 Chinamen could be isolated in one or two fields or employed by but a few companies and thus controlled and restricted, the problem would be very much simplified, but it is evident that, in this manner, the benefits would accrue to a few individual operators rather than to the industry as a whole.

Furthermore, to obtain legislation permitting the importation of Chinamen, it is safe to assume that it would have to be demonstrated that the benefits would be distributed equally over the country. To do this would necessarily mean that the 20,000 Chinamen would be scattered in small detachments over the various mining regions or they would relieve 20,000 men in one district who, in turn, would then be free to relieve the shortage wherever it was the most pressing. The first method, of course, would mean that the labor disturbing and nonassimilating qualities of the Chinaman would be distributed over most of the coal-mining regions. The latter expedient would require complete Government control of all coal-mining labor.

A Concrete Illustration

Taking 20,000 arbitrarily (for the purpose of illustration) as the number of Chinamen who could be advantageously imported, the question is whether either of these prices is not too much to pay for a gain of only 3.58 per cent. in production. If it is admitted that the use of Chinese labor would require an enormous expenditure of labor, time and money to overcome the resistance of the present labor to their importation, the question arises if this effort could not be more successfully expended on some of the causes that now retard the maximum efficiency of our coal mines. For instance, if instead of adding to our labor troubles, means could be found to successfully cope with the ever-present problem of strikes and suspensions, what result could be expected as comparing favorably with the proposed importation of Chinamen?

In 1915 the total number of days lost, owing to labor troubles, in the coal mines of the United States, was 2,467,431. Using the average of 3.91 tons per man per day in the bituminous mines, this would equal a production of 9,647,655 tons. If labor troubles could be reduced only one-half, it would be equivalent to the output of 3500 imported Chinamen.

Again, in 1915 the average number of days worked was 209, or an approximate daily output in the United States of 2,500,000 tons. If it were possible to induce the coal mines to work only 6½ days more, in a year, the additional output, based on figures for 1915, would be equivalent to the production of the entire 20,000 Chinamen working for one year. Increasing the days worked per year would seem to be the simplest of any war-time measures. The coal mines averaged 225 days in 1912 and 238 in 1913.

Another possible means of increasing production is the more extensive use of undercutting machines. The high return to the operators for coal since the latter part of 1915 will certainly tend to increase the investment in mining machines and, consequently, raise the average output per man. It is true that the severe loss of skilled workmen, in those mining districts where the output is a large per cent. machine-cut coal, will cause a decrease; but this loss may at least be partly compensated, if not overcome, by the many small mines enlarging their operations by the use of machines.

However, if the time comes, which seems very likely to be the case, when even with the expedients mentioned the supply of coal fails to keep up with the demand and the importation of labor becomes an imperative necessity, why not consider a field of labor supply which Mr. Parsons has evidently overlooked; namely the Mexicans?

Possibilities of Employing Mexican Miners

Previous to the revolutions in Mexico, a large part of Mexican labor was engaged in metal mining and accustomed to underground conditions. A large percentage of this labor is still without profitable occupation pending the resumption of mining activities in Mexico. The reasons that operate against the importation of the Chinese are not applicable to the Mexicans and, furthermore, the only noise required at Washington would be a sound wave of sufficient intensity to suspend the immigration law, which makes it an offense to solicit Mexican labor in Mexico.

Moreover, the importation of Mexicans into the United States under contract for a period of, say, five years ought not to prove a disagreeable arrangement to the Mexican government. If they could get rid of part of their surplus population who are always potential trouble makers and have them returned with plenty of money and the experience of five years' association in law-abiding communities, it ought to operate to their advantage.

Don't Use Court Plaster

The United States Government has issued a warning against court plaster, and no matter how good the quality, the use of all kinds of court plaster should be discontinued for the present at least, until the investigations of the Government have been completed.

This warning comes close on the heels of the circulation of stories that Germans have sent agents throughout the United States to spread such diseases as tetanus and typhoid by means of poisoned court plaster.

Specimens of court plaster sold by peddlers have been turned over to the health department laboratories of several states for examination. Every effort will be made to determine whether there are present on the surface of this plaster any tetanus or other organisms likely to cause disease.

The Labor Situation

General Labor Review

Throughout the union districts the mine workers have, with reasonable fidelity, kept the pledges they recently made to increase output. It has been their purpose to lay stress on the quietness of the union field while they raised "Merry Ned" at the nonunion mines. They could then say, "See how disorderly the nonunion districts are? Recognize the union; run your mines closed shop; collect the check-off, and the nation will have peace and the needed production. We will flood the markets with coal if we get the cars."

It is true that the nonunion districts have been having some trouble; in fact, all the trouble the union could achieve. But the trouble is not an argument for unionism; rather the reverse, for it is clear that the union has willed the disorder and is chargeable with it and not nonunionism. The crop comes from union, not from nonunion seed. It was not discontent or poverty that sowed it, but union agitation.

If cars could be switched around just where men were working, the few mines striking would not do much harm, for there is not enough equipment for all the coal that can be mined. Unfortunately, the cars cannot be thus distributed at a moment's notice. A mine prepares for work, the cars are put in the siding and they lie idle if a strike occurs, and this is especially true when the strike lays a large section of the coal field idle. The uncertainties of strike warfare, like the uncertainties of all warfare, tie up equipment inordinately.

But some union districts at least are not even now much freer from trouble than nonunion and are certainly not as free from trouble as nonunion districts would be without union incitation to discontent. There have lately been new button strikes in the anthracite field, and there has been a strike about the topping of cars in that field, which illustrates how little a union agreement prevents suspensions.

But to return to the consideration of the districts termed nonunion, because in them wage contracts have never been signed with the organization. In eastern Kentucky and eastern Tennessee the ground is being staged for a big strike. In Colorado the local officials, at least, are seeking the same end. The Colorado Fuel and Iron Co. says it will adhere to the Rockefeller plan of intra company organization. Alabama has recently made preparations for a strike to establish the union.

The union leaders in every place prate about their desire for harmony. They have apparently a piece of headquarter's oratory, which has been well thumbed and studied in all nonunion districts. They declare in effect that if they are given a chance they will insure harmony. "But the wicked nonunion operators," they add, "will not meet with us. They are callous about the great national need for fuel." In short it is all planned to shut down the nonunion districts if recognition of the officials is refused and then all the blame for the suspension is to be loaded on the operators. Surely no cry that the union is "doing its bit" will excuse such double dealing.

In central Pennsylvania a condition which seemed at one time to threaten an important reduction in coke output seems to have much improved. After all, Greensburg and Johnstown, which have resisted unionism so long, will not surrender to it hands down. Somerset County also has less labor trouble than ever.

Illinois has a few troubles. But the state is all unionized and Farrington the president of the union is a man of no little principle. When he says he is going to aid the production of coal, he may be relied upon to do it. Like all honest men, he is quite "huffy" about his honor and contrives to keep it inviolate.

Four Mines Tied Up by Button Strike

Twenty-five hundred or more employees at the North Franklin and Alaska shaft collieries, operated by the Philadelphia & Reading Coal and Iron Co. went on strike July 26, because more workmen were not affiliated with the union. About 1000 men and boys went on strike at the Buck Mountain and Vulcan collieries of the Lehigh Valley Coal Co. on the same day, because less than a half-dozen workmen had not provided themselves with the new union buttons.

I.W.W. Advocates General Strike

Circulars signed by the Industrial Workers of the World advocating a tie-up of the anthracite region have appeared in the upper end of Luzerne and Lackawanna Counties. It is said that they have been widely distributed among the mine workers. They are a part of the strike propaganda that was the cause of so much recrimination during the recent mine workers' convention at Wilkes-Barre.

The circulars are printed in English, but it is said that they have been distributed also in the other languages spoken by the men of the mines. They attack all contracts between employers and employees. They advocate general sympathy strikes wherever the men at any one mine are dissatisfied for any reason and walk out and add: "We are proud that the mine bosses fear and hate us."

The Industrial Workers of the World have with good reason been charged with deliberately advancing the interests of Germany by starting trouble from one end of the country to another. More than 1000 were driven out of Arizona recently. Last year the state police and the county authorities of Lackawanna and Luzerne Counties arrested 258 of them at Old Forge. After that they quieted down for a while. They have secured new leaders, and these leaders have plenty of money. Zumpano, apparently a poor man, when arrested recently in connection with I. W. W. meetings, was able to raise $10,000 cash bail at a few minutes' notice, but the Government held him on other charges.

Fusses Close West Virginia Mines

The mine workers in the New River field have started a number of contentions over unimportant matters. These differences have caused suspension of work at Bachman, Boon and Smokeless, and as already stated, at Raleigh and Dunloop.

The following notice, signed by John J. Cornwell, the governor of the state, has been circulated broadcast:

To All Manufacturers, Coal Operators and Mill Owners:

On June 19 the act passed by the last legislature requiring all able-bodied male residents between the ages of 16 and 60 years to work at least 36 hours each week became effective. To aid in the enforcement of this law you should report to the mayor of your city or town or to the nearest justice of the peace the names of any persons on your rolls who do not work the 36 hours any week during the war and who have no good excuses for not working.

I suggest, also, that you keep an honor roll of employees who work full time, post a copy of the honor roll in a public place and send a copy to this office.

We have a roll of the chronic idlers in the state and would like to obtain a list of men who work full time at their various callings. The men who put all their time and energy into production of any kind of commodities during this war are doing real patriotic service, and records should be kept of their service.

This is the order under which information was made against E. E. Coulter, of the Bower mine, Braxton County, as recorded in the issue of *Coal Age*, July 14, p. 63.

Miners Threaten To Seize Coal Cars

The mining work is being somewhat unevenly distributed. The Springfield, Ill., collieries seem to be getting all the cars they want, and the men are therefore making good wages. In the district variously termed the eastern Illinois, No. 8 Bed or Pittsburgh Coal district, work is extremely irregular. The Gaylord local No. 71 has addressed a letter to Governor Cox complaining that the Gaylord mine, as also others in Belmont and Jefferson Counties, particularly along the C. & P. railroad are only working half time. The mine workers naturally want to know whether discrimination is being shown to them and if there is any solution of their difficulty. A mass meeting is proposed of the men from the Florence, Gaylord, Yorkville and Red Bird mines.

The miners who formerly threatened to wreck and actually did wreck cars coming into Ohio loaded with coal from West Virginia now threaten to commandeer empty cars to fill the needs of the mines at which they work.

Suspended for Not Contesting Suit

The Washington Coal Operators' Association has suspended the Carbon Hill Coal Co. from membership. The attorneys of the company thus suspended recently settled out of court a suit brought against the company by Andrew Marr, who stated that he had a contract with the company under which he was to be paid for using his influence in the election of Martin J. Flyzik to the office of president of District No. 10 of the United Mine Workers of America. The suit was settled for $1500, and the association charges that as a result of the settlement the public will be led to believe one of its members, to wit, the Carbon Hill Coal Co., actually had entered into such a contract, thus laying the association open to charges of bribery. The association is disposed to believe that the contract was a forgery.

The suit of the Carbon Hill Coal Co. and the action taken by the coal operators' association has stirred up much feeling in District No. 10, and President Flyzik has called a special meeting of the district executive board to consider what further action should be taken.

Why Illinois Fails To Do Its Best

The miners in the Fifth and Ninth Districts of Illinois are so prosperous that they do not feel the necessity for steady work. They lay off work frequently in order to spend their money, and their idleness is becoming a problem. This difficulty was discussed at a joint conference held by the operators and members of the Executive Board of the United Mine Workers in St. Louis during the past week. No formal action was taken, but the union officials promised to do all in their power to keep the men at work. The conference lasted all week, but the matters taken up were of routine character and related to minor disputes.

Miners employed at the Kortkamp mine, Hillsboro, Ill., after being on strike for three weeks, have returned to work. There has been some dispute as to whether this strike arose from pro-German sentiment or from a reasonable dissatisfaction with John Criswell, the mine foreman, who, to accord with the laws of the State of Illinois, is known as the mine manager. Some of the men complained that he did not give them an equal opportunity to get out coal and that where the working conditions were bad he refused to improve them. A demand was made for his discharge, and when it was refused 124 men asked for their time. Later the number was increased to 240. The other 160 men at the mine did not strike, but those who did prevented them from working. At first the men picketed the mine, but they relinquished the job later to their wives and daughters. It is said that the women have been used for this work because the men thought that they were less likely to be held to account by local and Federal authorities. All the strikers have been taken back except six who were arrested for assaulting the company's bookkeeper. Edwin H. Perry, superintendent of the company, has promised that the things of which the men have complained will be immediately and completely remedied.

All this time the union has not been idle. It does not approve of the action of the agitators who have stirred up trouble and is quite willing to see certain men excluded from the Kortkamp mine. When these agitators appealed to the grievance committee, they were refused a hearing on the ground that the complainants had forfeited their rights by violating the rules of the organization.

Miners employed by the Athens Mining Co. at Athens, Ill., complained a week ago that the company's scales were giving them short weight to the extent of 100 pounds to the car and went on strike. The scales were given a Government test, and it is undersetood that a discrepancy was found, but not so great as the miners claimed. The dispute was adjusted, and the men have returned to work.

Eastern Kentucky Threatens Strike

A five-day convention of 160 representatives of coal-mine workers in eastern Kentucky and Tennessee met at Pineville, adjourning on Friday, July 20, after many demands had been formulated and after representatives of the operators failed to respond to an invitation to appear and discuss the situation. Union officials in charge of the movement are empowered to present the demands to the operators and to make terms with individual firms if they think best. They also have the power to call a strike, not, however, without first making the position of the workers known to the Council of National Defense at Washington.

The convention was representative of the Nineteenth District of the union organization, including all of eastern Kentucky and the Tennessee district. The wage scale which is demanded would, however, apply only to Whitley, Knox, Bell and Harlan Counties in Kentucky, and Anderson, Campbell and Claibourne Counties in Tennessee. The convention was presided over by T. J. Smith, president, who stated after the meetings that the workers did not contemplate any arbitrary action. If, however, the Council of National Defense failed to act, or failed to procure an agreement from the operators for a wage conference with the workers, the result would be an order for stoppage of work to be put in effect by the district officials in a few weeks at the furthest.

Demands of the workers are set forth in the following, as reported in a resolution by the scale committee: First—A substantial increase on coal mined, daywork and deadwork. Second—An 8-hour workday. Third—A uniform outside and inside day-wage scale. Fourth—A uniform scale of payment for all deadwork and all deficient work. Fifth—All coal mined shall be weighed and paid for on the tonnage basis, and a check weighman shall be placed on every tipple throughout the district. Sixth—All miners employed at mining coal at the face shall be paid the maximum tonnage rate for such work. Seventh—Full and complete recognition of the union, in order that discipline and contractual obligations may be fully enforced at the mines.

The United Mine Workers of America was characterized in resolutions as "America's greatest institution for the uplift of the entire coal-mining industry of our country. By the maintenance of living wage and humane conditions for our people, it gives stability to our industry and insures industrial peace and better prices for the product of the mines." The probability of the complete unionization of the southeastern Kentucky and Tennessee fields was declared to be a development that would give stability to the industry in that field and bring about a better understanding between operators and miners. The invitation to the operators to meet with the miners was included in this resolution.

All the miners in the southern part of Saskatchewan, a province in central Canada, have gone on strike, demanding a 20-per cent. increase in wage. A thousand miners are out. The field involved mines a woody lignite which only by reason of its isolation can compete with more perfectly mineralized fuels in Canada and the United States.

New Apparatus and Equipment

Girtanner Chain-Grate Links

In overhauling a chain grate it is better to take off the entire chain and put in new links throughout. The best of the old links can then be utilized to make up the deficiencies in the next grate. In this way links of

FIG. 1. STANDARD CHAIN-GRATE LINK

the same design and quality of material are used in each stoker. The removal of the chains also permits overhauling the rollers on which the links travel.

Fig. 1 shows a standard link with 4½- or 5-in. centers and fire surfaces 1¼, 1½ or 1¾ in. wide, made by the Fred Girtanner Co., Chemical Building, St. Louis, Mo. The fire surface of the link is slotted to give an air space of 36 per cent., and depending upon the length of the rollers betwen the links, separating the top surfaces from $\frac{1}{16}$ to $\frac{1}{8}$ in., this air space is somewhat increased. Other distinguishing features are corrugations in the surface of the link body to give greater cooling surface and slots in the hubs and rollers separating the links to keep the rods cool. The

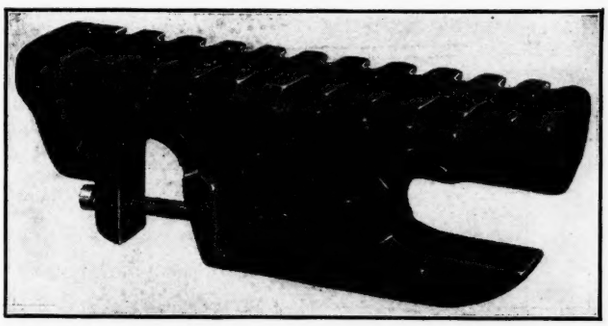


FIG. 2. CHAIN-GRATE REPAIR LINK

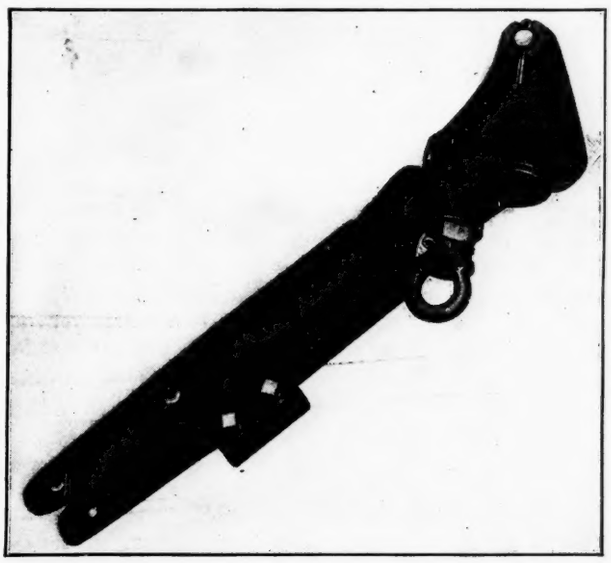
links may be applied to any chain-grate stoker by changing the driving sprockets and idlers.

A repair link of the same general design is also made. As shown in Fig. 2, it has an open horizontal slot at the rear and a vertical slot at the front with a screw to hold the link on the rod. These links can be put into place while the stoker is in operation. The old link is first removed and at the next revolution of the grate the new link is inserted.—*Power.*

Adjustable Trolley Harp

The Elreco trolley harp shown in the accompanying illustration is claimed to be a big improvement over similar articles on the market. In this trolley harp, which is manufactured by the Electric Railway Equipment Co., of Cincinnati, Ohio, it is possible to take up all lost motion and wear between the harp and the pole socket. This is accomplished by the simple operation of removing the cotter pin and turning the castle-headed nut one-sixth of a turn or more. This nut is tapped with 18 threads per inch, which results in a fine adjustment between the two faces.

Setscrews are placed on the side of the feeder lug, in order that their heads may not cut through the insulating tape, which is usually applied to a pole socket to prevent the motorman from receiving shocks. On many



THE TROLLEY HARP AND SOCKET

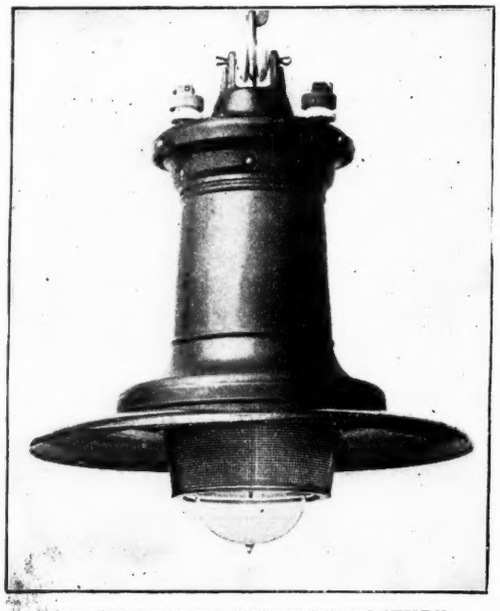
types of pole sockets the setscrews are placed on the bottom of the feeder lug, and as the trolley harp often came in contact with the mine locomotive, it frequently happened that the heads of the setscrews would cut through the insulating tape, making it dangerous for the motorman to grasp the harp, or pole socket, at this point. The rib on the pole socket prevents the harp from fouling the mine timbers should the wheel for any reason leave the trolley wire.

New Lighting Fixture

In one of its suburbs the City of Buffalo recently installed a new type of street-lighting unit. This unit, which is both efficient and economical, is equally suitable for lighting large open spaces such as those encountered in industrial plants. Where it is desirable

a pendant form of the same type of unit can be used (see illustration).

In the ordinary street light a large proportion of the rays is thrown upward and lost, while with the new unit these rays are all re-directed, at a downward angle, to the surfaces where illumination is needed.



THE SUSPENDED LIGHTING FIXTURE

This new fixture contains a prismatic refractor, which collects the upward rays of the lamp, in this case a 100-cp. Mazda C, and re-directs them outward at a slight downward angle, thus illuminating the surfaces used for traffic. This saves the light thrown upward and wasted with the average installation and applies it to a useful purpose. The candlepower of the light used with this unit may vary, but the Mazda C lamp should be employed without exception.

This unit is the latest addition to the General Electric Co.'s many types of outdoor lighting fixtures.

The Scott Gasoline Rock Drill

The gasoline rock drill developed by L. L. Scott, an engineer, located at 1104 Bank of Commerce Building, St. Louis, Mo., is the product of a number of years' work on the part of its inventor. This machine is a complete self-contained rock-drilling plant mounted on a tripod. The power plant and pipe lines required by other drills are thus eliminated. Although these drills have been operated in the St. Louis quarries for the last five years, Mr. Scott has not felt fully satisfied to put his drill on the market until now. Arrangements are at present being made to market these drills on a commercial scale.

A Scott drill operating at the plant of the Glencoe Lime and Cement Co., St. Louis, Mo., has drilled 68 ft. in a 9-hour day, using 2 gal. of gasoline and ¼ pint of cylinder oil. The rock was hard limestone.

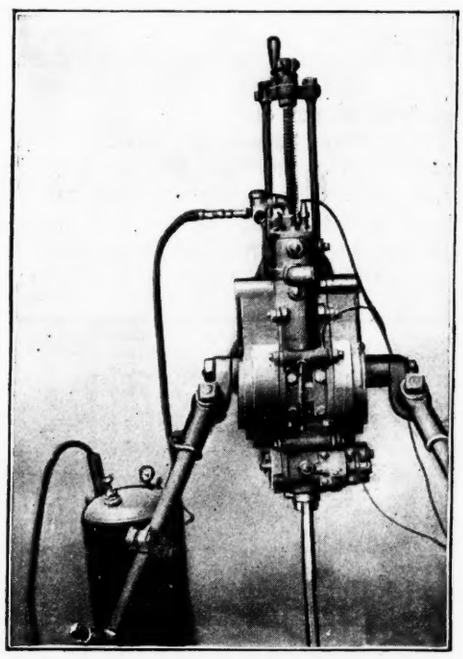
The size of machine developed will drill holes up to 12 ft. in depth. The drill weighs 200 lb. without the mounting, and all parts are inclosed and protected.

Gasoline is supplied from a small steel pressure tank in which a pressure of 2 lb. is pumped up by hand twice per day. About one minute is required for pumping up pressure.

The Atwater-Kent unisparker ignition is used and is entirely inclosed. All oiling is automatic—½ pint of oil is mixed with 5 gal. of gasoline and lubricates every part of the machine.

The drill operates on the "hammer" principle. A hollow hexagon drill steel is used (no special shank being required), and the water for cooling the engine is run through the hollow steel to the bottom of the drill hole. About 800 blows per minute are struck. The engine is a simple single-cylinder two-cycle machine and is free from valves, gears and cams. The hammer is moved directly by explosive pressure and strikes a "free piston" blow.

There are two pistons, one contained within the other. The outside piston is the hammer and has no mechanical connection with the inside one, which is connected to the crankshaft through suitable connecting-rods. An explosion takes place with every downstroke, driving the two pistons downward. The hammer piston strikes its blow on a tappet (which contacts with the end of the drill steel) at about 60 deg. before the crankshaft has reached its lower dead center. The inside piston moves on (independently of the hammer piston) with the crankshaft. This inner piston uncovers air ports in the hammer piston (on its independent downward movement), and on the back stroke (caused by the momentum of the flywheels) the hammer is picked up on a cushion of air. When the hammer strikes its blow, it is free and disconnected from all

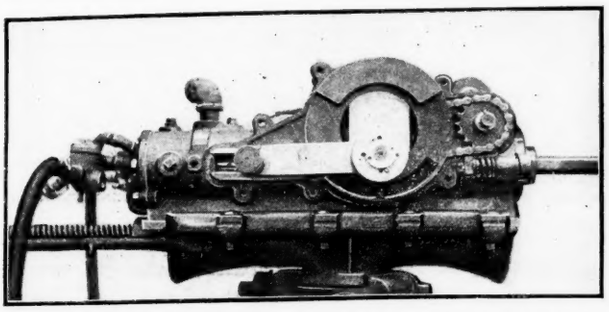


THE DRILL ON ITS TRIPOD

parts. By this arrangement no shock to the crankshaft or bearings is possible. Ball and roller bearings are used on the crank and rotation shafts.

The drill steel is rotated step by step by a special "compound" gear, no ratchets being used to get intermittent rotation. A standard double-thread worm is cut half in two, and adjacent threads are connected by

a straight no-pitch thread. The wormwheel is standard, with the exception that one side of each tooth is cut straight. The compound worm which operates the wormwheel is driven by means of a chain and sprockets from the crankshaft. The wormwheel, which is attached



SIDE VIEW OF DRILL WITH CRANK COVER REMOVED

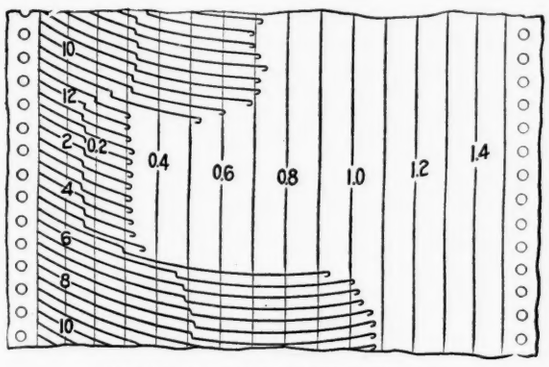
to the chuck (which carries the end of the drill steel), rotates during one-half revolution of the worm and is stationary during one-half revolution. The rotation of the drill steel takes place only on the upstroke of the hammer.

Recording-Demand Watthour Meter

The demand system of metering is becoming general in central-station power contracts. With large power requirements, it is common to fix the rate for the service by the time and duration of the maximum demand as well as by the amount of this demand. To determine this, a reliable demand meter giving a permanent graphic record is required.

The type RA recording-demand watthour meter, in a single unit, measures both the kilowatt-hours consumed and the integrated demand. It indicates on a four-counter dial the total kilowatt-hours consumed and records in a permanent form the integrated demand over successive predetermined time intervals. It is installed as an ordinary watthour meter and requires no additional apparatus or wiring.

The measuring and recording elements are mechanically interconnected; there are no electrical contacts to become inoperative. The recording element is controlled by a high-grade clock having features that make not only for clock accuracy but for reliability of continuous operation. The measuring element is the standard Westinghouse type OA watthour meter with special gear train.



GRAPHIC WATTHOUR RECORD

In addition to the usual four-counter register this instrument contains a mechanism for obtaining a graphic record of the demand. The time interval of the meter and the advance of the record paper are controlled by a hand-wound clock.

Under load, the gear train of the watthour meter advances the counters in the regular manner. At the same time it causes the ink-carrying pen to advance across the record paper a distance proportionate to the energy registered. At the end of a predetermined time interval a stud on the reset wheel releases the pen gear from mesh with the gear train, and a weight returns the pen to zero, where it is again meshed with the gear train to repeat its advance during the next time interval. Meters are made for 15-, 30-, or 60-min. intervals; a meter made for one interval can readily be changed to operate at one of the other intervals.

Irrespective of the time interval of the meter, an operating spring controlled by the clock causes the paper to advance $\frac{1}{16}$ in. every 15 min. Thus, if the

THE NEW METER

meter is arranged for 15-min. intervals, the paper advances just before the pen is reset, so that the pen makes a distinct and readily observed record of the maximum pen travel, showing both the amount of integrated demand and, by the time calibration printed on the record paper, the time of its occurrence.

If the meter is arranged to have 30-min. intervals, the paper therefore advances one 15-min. space between periods, causing an offset mark on the chart at the middle of the 30-min. interval. This offset mark enables the reading of the integrated demand at 15-min. as well as at 30-min. intervals. Similarly, if the reset wheel is set for 60-min. intervals, three offset marks indicate the 15-min. demands between each regular 1-hour demand. The entire meter is mounted on a cast-iron base. The cover is of pressed zinc with dead black finish and is fitted with a dust-proof gasket. The glass windows over the dial and chart are well sealed. The electrical measuring element consists of the standard Westinghouse type OA watthour meter on its own supporting casting, but without cover. Therefore, this element can be removed from the case as a unit without changing the calibration.

The type RA recording-demand watthour meter is made by the Westinghouse Electric and Manufacturing Co., of East Pittsburgh, Penn.

Representatives of the coal producers from all parts of the United States met in Washington, Wednesday, July 25, and perfected their plans for the apportioning of the coal which will be needed by the Government for the ensuing year. Plans for the organization of the National Association of Coal Operators were completed at a meeting, Thursday, of representatives from 31 trade bureaus and associations. These were the two important events of the week in Washington.

While most of the members of the Committees of Seven, who in answer to the summons of Francis S. Peabody assembled in Washington July 25, feel that they are not receiving the degree of coöperation to which they are entitled from some of the representatives of the Government, this in no way interfered with the constructive results of the meeting. The resolutions adopted July 17 by the operators from the smokeless districts were indorsed by all the states. To further the plan for supplying all Government needs along the most efficient lines, a resolution was adopted suggesting the appointment of L. A. Snead, of the White Oak Coal Co., as the representative of the operators to pass upon and distribute the requisitions made by the Government.

In order to facilitate further the supplying of Government coal, the Council of National Defense was asked to name one person through whom all requisitions for Government coal should be handled. This agent then could deal directly with Mr. Snead, representing the operators. A committee consisting of Rembrandt Peale, John Brydon, S. H. Robbins, G. H. Caperton, W. K. Field, H. N. Taylor and J. Quealy was named to urge the Council of National Defense to designate a man through whose hands all the Government orders would pass. In this way duplication of orders can be prevented, priority of shipment arranged and the whole work centralized.

It took lengthy discussion to convince the committees from Kentucky, Tennessee and Indiana that the proper steps are being put forward for the equitable and practicable apportionment of the coal, but these delegations finally voted to support the resolutions adopted by the smokeless operators at their meeting of July 17 and in addition gave their unanimous support to the following resolution:

Resolved, That the Committees of Seven authorize and empower the chairman of the Committee on Coal Production, through such agencies as he may see fit, to arrive at the just proportion of coal to be furnished the Government from the different sections of the country and see that it is equitably distributed throughout the country.

To coöperate with the Committee on Coal Production, the state committees then appointed the following committee: Alabama—S. L. Yerkes, M. W. Bush; Arkansas—H. N. Taylor, J. G. Puterbaugh; Illinois—Rice Miller, William L. Selmick; Indiana—J. C. Kolsem, A. M. Ogle; Iowa—W. T. Wilson, E. C. Smith; Kansas—J. R. Crowe, Ira Clemens; Kentucky—Alex Bonnyman, E. S. Holburn; Maryland—T. B. Davis, Howard Drydon; Missouri—F. W. Lukins, E. J. McGrew; Ohio—G. C. Weitzel, S. H. Robbins; Oklahoma—D. J. Jorden, R. T. Price; western Pennsylvania—James P. Walsh, J. T. M. Stoneroad; central Pennsylvania—Rembrandt Peale; J. C. Brydon; Tennessee—John L. Boyd, E. C. Mahan; Texas—W. K. Gordon, H. H. Taylor; Virginia—Otis Hauser, C. E. Mockus; West Virginia—G. H. Caperton, C. H. Jenkins; Washington—D. C. Botting, Herbert Addison.

C. P. White, of Cleveland, and C. E. Lesher, of the United States Geological Survey, who acted as president and secretary respectively at the meeting to perfect plans for the National Association of Coal Operators, were agreeably surprised when the roll call revealed the fact that 31 of the country's 43 coal-trade associations were represented. It required a continuous session from 10: 30 a.m. to 7: 30 p.m. to get the proposed constitution and by-laws and the declaration of purposes into shape for submission for ratification. The declaration of purposes adopted at the meeting and submitted to the associations and to the operators for ratification reads as follows:

Whereas, Coöperative effort on the part of the coal producers in the United States is deemed essential to—

The proper conservation of the coal deposits of the United States by increasing the yield per acre to the maximum;

Coöperation with public officials, both state and national, for the material benefit of all;

The ascertainment and compilation of data directly and indirectly bearing upon the production, transportation and marketing of coals;

The prompt enforcement of state and Federal laws relating to mines and miners;

The ascertainment and installation of uniform cost-keeping methods and uniform and improved accounting systems;

The establishment of bureaus to furnish information so far as proper and legal to the coal producers, the buyers and users of coal, the officials of Federal and state governments and to the public generally;

The establishment and maintenance of proper relations between the carriers and the coal-producing companies, including the maintenance of an adequate car supply, the ascertainment of facts and the compilation and distribution of data and the statistics relating to transportation from the several coal fields to the markets;

The encouragement and fostering of the general welfare of the United States coal-mining industry; and

Whereas, It shall be thoroughly understood by the members of this association that no part of the machinery of this association will be permitted to be used to establish, regulate, maintain or control prices for the sale of coal, to divide territory, to regulate, diminish or control the production of coal, or limit or control competition; and that no

information shall be collected or distributed respecting any prices which any member intends or expects to ask under any circumstances whatsoever,

Therefore, The associations and bureaus of coal operators in the United States have formed the National Association of Coal Operators and have adopted articles of association and by-laws.

A committee charged with the work of putting the association in operation was appointed as follows: Z. T. Vinson, West Virginia; H. J. Davis, Tennessee; George H. Barker, Ohio; C. G. Hall, Indiana and E. C. Searles, Illinois.

As soon as the action taken at the meeting Thursday can be ratified, a meeting of the representatives of the associations will be called to elect Directors.

The more important of the articles of Association and by-laws adopted at Thursday's meeting follow:

The membership of the National Association of Coal Operators shall consist of representatives of associations of coal operators and, under special arrangements with the Board of Directors, such representatives of groups of coal operators, or individual coal operators who are actively engaged in the production and distribution of coal, as shall apply for membership and qualify therefor under the articles of association and by-laws.

The management of the association shall be vested in a Board of Directors, to consist of nine representatives elected from the membership.

The Board of Directors shall employ a general manager (title to be agreed upon), a counsel and such other employees as may be necessary, define their duties and fix their salaries. It shall levy such assessments on members on a pro rata basis of tonnage represented as may be necessary for the financial support of the national association. It shall exercise general direction of the management of the association and shall make such rules and regulations as are necessary to carry on the work of the association.

At all annual and special meetings of the association each member in good standing will be entitled to as many votes as there are operating companies in each membership.

A further increase in the percentage of full-time capacity realized in actual output of bituminous coal took place during the week ended July 14, as is shown by the weekly coal statement of the Geological Survey. The report shows that 77.4 per cent. of the full-time capacity of the mines was realized. This compares with 76.5 per cent. for the week preceding and with 71.4 per cent. for the week ended June 30.

While there has been an improvement in the car situation, the report shows that this is still the most important factor limiting production. Practically 16 per cent. of the loss in output is chargeable to that cause. Labor shortage and labor troubles are responsible for 3.4 per cent. of the loss, while mine disability caused 3.9 per cent. Referring to the Southern Appalachian region, the report says:

Reports from the Southern Appalachion region indicate a better car supply, offset, however, by a shortage of labor. The following data from the southwestern Virginia coal field, supplied by 82 operators with a production of around 135,000 tons per week, serve to indicate conditions in that area. Losses of full-time capacity are shown as follows: Car shortage, 1345 tons; labor shortage, 14,201 tons; mine disability, 11.731 tons.

"It is gratifying to note," says C. E. Lesher, who prepared the report, "that the output in this region is not being limited by strikes, but the cause of largest loss, the shortage of labor, is one which can be overcome only by full-time service."

The Coal Production Committee of the Council of National Defense was definitely informed recently by Provost Marshal General Crowder that miners as a class will not be exempted from the selective draft. No class exemptions will be made, as is definitely set forth under Section 44 of the Exemption Regulations, which states that any claims for discharge on the part of persons engaged in industries, including agriculture, must be filed with the district board.

General Crowder's office has been deluged with mail, hundreds of letters coming from the heads of large industrial concerns and pleading for special exemptions in the case of men doing specialized work. Appeals of this kind can accomplish nothing, as the Provost Marshal General cannot show any favoritism. The question of whether or not a man is more useful to his country in a peaceful pursuit than in military service is a matter to be taken up only with the district board.

While it is impossible for the Federal Trade Commission to indicate the exact date on which its decision will be reached with regard to the cost of coal production, it did authorize the following statement:

The report that will be sent to the President will be based on careful cost determination of wages, maintenance, overhead and material charges. Depreciation is carefully considered, as are investment and other factors. Due attention is being paid to the primary factor of maintenance of maximum production.

The work entails careful study of many sets of books and inspection at the mines frequently of special factors bearing on costs. As the reports come to the commission, the information is correlated and each report is carefully analyzed and checked up. All apparent exceptions are investigated. The result will be that, when the report is sent to the President, it will have been done with such complete thoroughness that a "fair and just" price can be determined on the basis of the cost determination. It is the cost determination only, not the price determination, with which the commission is concerned.

In the matter of Lake cargo coal rates, the Interstate Commerce Commission has rendered an opinion of which the following is the summary:

1. The reasonableness per se of the rates cannot now be determined because of the abnormal conditions prevailing.
2. The rate adjustment found to be unduly preferential and prejudicial; specific relationships in the rates as between the several originating districts ordered established and maintained for the future.
3. The respondents required to state separately in their tariffs the charges for the line haul and the dock services respectively.

The case involves the reasonableness and propriety of the rates, rules, regulations and practices applicable to shipments of bituminous coal in carloads from the mines in Pennsylvania, Maryland, West Virginia, Virginia, Kentucky and Ohio to Lake Erie ports for transshipment via vessel.

Publication of a rumor that Francis S. Peabody, the chairman of the Committee on Coal Production, is about to resign his office with that committee is denied vigorously. In this connection it is recalled that only on Thursday of last week, he made the following statement in a public speech:

"If it were not for the patriotism which I feel, it would be impossible to bear public criticism and perform efficient service. It is true patriotism to stand up under attacks. I feel the same as if I had enlisted. I feel that my resignation must not be submitted, no matter what criticism is made of me. I feel that the only way by which I can be removed from my work is to be put up against a wall and shot. That is the spirit the soldier must have."

Who's Who In Coal Mining

Evan D. John

It is always a pleasure to record the deeds and attainments of one who, by years of laborious toil and application, has won for himself the right of acknowledgment; but the pleasure is intensified when the man is imbued with a natural modesty that shrinks from display, and the outline of events by which he has scaled the ladder and achieved success is all too meager to satisfy the desire of friends to know the secret of his success. Such a one is the man of whom we write.

Evan D. John, recently appointed by Governor Frank O. Lowden to the newly created office of Director of the Department of Mines and Minerals of Illinois, was born in Measteg, Glanmorganshire, South Wales, in 1861. Mr. John was the son of a miner, Thomas John, who

EVAN D. JOHN
Director, Department of Mines and Minerals of Illinois

left his native country, South Wales, in the '70's, and came to America, where his ambition led him to hope he might make a home.

The subject of our sketch entered the coal mines in South Wales when 8 years of age, as a trapper boy. His early schooling was limited, but habits of industry and perseverance have supplied this lack and, together with the later years of practical experience, have made him the intelligent miner that he is today.

When 19 years of age Mr. John came to America and joined his father at Murphysboro, Ill., where the elder John has located. After working for a few years in the local mines at that place, the young man's ambition led him to visit other coal fields, where he gained a wide experience, working as a miner in the mines of Ohio, Pennsylvania, New Mexico, Indian Territory and Iowa, where, in 1886, he held his first position as mine foreman at Centerville.

Returning to Illinois, in 1888, he located at Springfield, and shortly after was called to take charge of the mining machines at a mine located at Spaulding, a few miles north and east of Springfield. It was not long, however, before he became mine manager (foreman) of the mine, and a little later was appointed superintendent, which position he held until 1892, when he was called to superintend a mine located at Barclay.

Mr. John has served several terms as state mine inspector, in Illinois, having been appointed to that office by Governor John R. Tanner, in 1897, and again by Governor Charles S. Deneen.

In 1910, Mr. John was chosen a member of the State Mining Board and served as acting president of the board upon the retirement of its honored president, Richard Newsam, in 1913. For several years, Mr. John was general superintendent of the Manufacturers Fuel Co., with headquarters at Chicago. In the course of time he became part owner in the Carterville & Big Muddy Coal Co., disposing of his interest in that operation a few years ago.

Although Mr. John did not have the advantages of an early education, this fact has not been a stumbling block in his way; but has rather acted as an incentive to his ambition and resulted in making him, from the crown of his head to the soles of his feet, a selfmade man. Without hesitancy, *Coal Age* subscribes to the appointment of Evan D. John as director of the Department of Mines and Minerals, in the reorganization of the coal-mining interests of Illinois. Mr. John is probably one of the best informed mining men in that state, and his qualifications well fit him for the duties of the office he now holds. Mr. John is ably supported by Martin Bolt, as assistant director.

Explosion at New Waterford Mine

An explosion occurred in No. 2 colliery of the New Waterford district, Cape Breton Island, Nova Scotia, at 7.30 a. m. July 25. This mine is owned by the Dominion Coal Co. The disaster caused the death of at least 67 men whose bodies have been recovered. About half were native miners, a third Newfoundlanders and the rest foreigners.

The explosion occurred between No. 6 and No. 7 landings about 2100 ft. down the slope. No information has been given out from which the reason of the accident can be determined, but the time of the explosion seems suggestive of the presence of gas. Forty or fifty men were working at No. 6 landing when the explosion took place, and at the time of this report efforts were being made to find three men still missing. A number of rescued miners became temporarily insane and had to be put under restraint. Four men working at No. 7 landing had their heads blown off.

Rescue workers using the Draegar apparatus displayed great courage and endurance, but their work was one of much difficulty owing to the gas that flooded the mine. Most of the bodies of the victims were recovered during the night following the explosion, and one man was rescued alive on the following day—after 36 hours in the mine.

Editorials

Is the Anthracite Shortage a Myth?

NEVER before has there been such a seeming shortage of anthracite coal as now prevails, except during protracted labor disturbances in the mining regions. At the same time the leading anthracite companies, which produce 90 per cent. of the hard-coal output, are reporting the heaviest shipments in the history of the business. How then are these two conflicting conditions to be reconciled?

The first and most important explanation is the hoarding of coal that is being practiced in all parts of the country. Especially is this being done by the wealthy class of consumers, who are ready to pay a substantial premium as insurance against the possibility of having no coal. Greater prosperity and more plentiful money, making the smaller domestic consumer more extravagant in the use of coal, together with the increased industrial activity and the withdrawal of other fuel, such as domestic coke, are contributing factors.

The statement is frequently heard that certain districts are being discriminated against. We placed this statement before one of the biggest men in the anthracite industry, and he furnished us with the following approximate comparative statistics of shipments for the first six months of this year and 1915 to four of the chief distributing districts in the country: New England, 4,417,000 tons this year, as compared with 3,647,000 in 1915; New York, 10,550,000 tons, as compared with 8,206,000 tons in 1915; Philadelphia, 3,569,000 tons, against 2,761,000 tons in 1915; Buffalo and Erie, 2,692,000 tons, against 2,130,000 tons in 1915.

The retailer is largely responsible for the coal scare by the way he has been playing on the fears of the public. He is, as a rule, the most aggressive complainant about the inadequate supply, while at the same time he has been aiding and abetting the wealthy consumer in the latter's attempts at hoarding coal. The foregoing statistics seem to speak for themselves, and in view of them it is difficult for us to see how the situation can be so grave as many seem to believe.

The Nevada Senator from Nevada

FEW articles on the era of high prices are so grievously misleading as the one in the New York *Times* of July 21, "War-Bred Socialism," containing an interview with Senator Francis G. Newlands, chairman of the Senate Committee on Interstate Commerce.

We have all kinds of sympathy with those who seek lower prices for coal and every other product, much as we feel that only with high prices can the war be won. We regret to see wealth flowing into the hands of the already wealthy. We are sorry that the working man cannot be induced to meet the cost of financing the war by his savings. But it looks much as if there is no other way of securing money for the war than by allowing prices to take their natural courses.

But Senator Newlands does not see matters in that way. He would like low prices during the war, and he rates the patriotism of the industries by the sacrifices in prices which he believes they have made. If that is a true criterion, coal stands preëminent. The large anthracite producers have not in any way or at any time raised their prices disproportionately to the increased cost of production, and the bituminous coal operators have recently cut their prices in half and further reduced the price to the Government 50c. per ton.

If profiteering during the war is an offense against the public, the coal industry has shown a larger response to the demands of righteousness than any other industry.

Senator Newlands says that the copper interests have shown the right spirit. What have copper producers done? The price was about 30½ to 32c. per pound; they cut the rate to 16⅜c. on only part of what they agreed to sell to the United States Government.

The quantity sold at that price was limited to about 45,000,000 lb. They have refused to sell at that price the rest of the copper demanded by the Government. Contrast that with the attitude of the coal men. They make a cut at least fully as large to everyone and a further cut to the Government.

It is the old story. Be liberal to all and no one will thank you. The coal men have halved their prices to the people generally, and Senator Newlands says they are not doing as well as the copper men because they do not halve the price yet again when making an offer to Uncle Sam. Unburden yourself of your wealth and people will condemn you because you are not as generous as those can be who have kept their fortunes. It is time for such sectional muckrakers as Senator Newlands to be told that the public will not stand for a browbeating of one state by another unless some state has a real good cause. Senator Newlands has always been an advocate of whatever will help Nevada regardless of the interests of the nation. He was for years a leader in the bimetallist agitation, which meant that the public was to pay heavily to help put the Nevada silver producers on their feet.

He comes from an important copper-producing state and so tells the public that the copper producers have done well and the coal men have done badly. His reference to the lumber interests appears as an aside. The reduction in price on the lumber intended for cantonments is a mere bagatelle. The lumber men have not cut prices to the general public. Yet they could well afford to, for lumber has made exceptional advances in recent years.

Coal Age is not so narrow in its purview as this Nevada Senator from Nevada. It is willing to admit that the copper industry was the first to reduce its price to the Government, the price of copper for some of the Government's needs being lowered as early as Mar. 21 of this year. It also made that reduction with more grace and less compulsion. *Coal Age* also admits that the copper magnates were far more generous to the Red Cross than the coal-mining concerns. It remains to be seen whether the shareholders of the copper companies will show a like spirit of patriotism.

Prices That Sustain and Build

WHERE prices will ultimately be set is a matter of vital importance to the country. Let us never forget that a low price and a low profit may be more detrimental than a higher price and a larger profit.

The President in his recent July 11 address to the public said: "A just price must, of course, be paid for everything the Government buys. By a just price I mean a price which will sustain the industries concerned in a high state of efficiency, provide a living for those who conduct them, enable them to pay good wages and make possible the expansions of their enterprises which will from time to time become necessary as the stupendous undertakings of this great war develop. We could not wisely or reasonably do less than pay such prices."

This is an admirable statement. We wonder if the President really knew how far he was committing himself when he made it. The public needs that some businesses be increased 1000 per cent., others 500 per cent. and some not at all. Some need not be as active as before, but they do not affect the result an iota because the money invested in them cannot be taken out. For instance, we need fewer brick during the war, but we cannot make use of the equipment of the brickyards for any other purpose than making brick.

So in some businesses we want the expansion to be 1000 per cent., but this can be done partly on borrowed money. The expansion of business in those industries can, it is true, be secured in part from those industries that have not hitherto participated in them. But to secure the money required for the industries making the largest demands the average profit in the industries as a whole must be abnormally large.

Let us suppose then that on the whole the war-worthy business of the country has to be stimulated 50 per cent. in a year. Then the earnings must be 50 per cent. *on an average* in war-worthy industries, for a dollar of capital is needed on an average to make a dollar's worth of product.

More than that will probably be needed, for some of the capital made will not go into worth-while industry. Coal men in the East will open new and unnecessary mines if not restrained. Farmers and others will build good houses. Others will invest in mining ventures that are not successful. Some of the profit will be wasted. But the profits must be large if with all the leaks sustained we are to make industry bound with the required vigor. Then there is a need for greater efficiency, which can only come in large measure if we finance adequately those improvements by which efficiency may be insured.

Now, these conclusions are based on the assumption that none of the profit is taken by taxes. If the tax is 25 per cent., the profit must be ⅓ more than 50 per cent., or 66⅔ per cent. If it is 50 per cent., the profit must be 100 per cent. If it is 80 per cent., as has been suggested, the profit must be 250 per cent.

It is well to face these facts manfully. Billions must be made by those of whom billions are required. The war must be won somehow, either by profits and taxes or by the savings of wages. If we could get the worker to buy stocks and bonds, we could reduce profits without much injury being done, though without dividends the prospect of investment would hardly seem inviting to the workman, especially in view of the fact that some war-worthy industries might not be peace-worthy and the loss might be considerable.

It would be well if we could rely on the Government to build the factories and supply the munitions. This is socialism, but there is nothing inherently bad about that doctrine. It is not wicked; it is merely unworkable. We have just raised two billion dollars. Business collected that sum in a few weeks. It will be months before the Liberty Bonds will be ready for issuance, because the Government management is so hopelessly slow and inept.

The Liberty Bond buttons, on the other hand, were issued with promptitude, these not being made by the Government. However, the Treasury must be credited with having distributed these purchased badges of honor, though the distribution was not by any means efficiently done. Many who bought bonds and paid cash for them are yet without buttons. Many who have paid a mere pittance toward them are disfiguring their lapels with the most inartistic badge ever devised.

We put men in jail and we fine them for being slow in making reports to the Government relative to their business and taxes, but when the Government makes reports or prints booklets no one knows when they will appear. Look also how our shipping program is being muddled. No one can wish for more governmental management or ownership till our Government reforms.

Government Statistics

ONE of the greatest economic problems of all times has been to attain a balance in the supply and demand of commodities. Only in this way can trade equilibrium and consequent smooth working of industrial operations be maintained. To secure these ends, full, accurate and prompt statistical data are needed.

The latest addition to the Government statistics is a weekly statement showing the comparative production over the three weeks ended July 7, in percentages of the full rated capacity, and also the actual causes for lost time and the amount of tonnage so lost. The current statement is estimated to represent about 25 per cent. of the entire production of the country.

Discussion by Readers

Sinking a Shaft to Coal

Letter No. 2—Referring to the inquiry "Sinking a Shaft to Coal," *Coal Age*, June 16, p. 1054, I notice that the writer proposes to line the shaft with concrete, for 40 ft. down from the surface, and expects to make the walls 7 in. thick, building the lining after sinking the shaft to that depth with temporary cribbing.

Allow me to suggest that a 7-in. wall of concrete will not be of sufficient thickness to withstand even the hydrostatic pressure that is liable to come on the wall in case the weepholes become clogged, which is frequently the case. Neither will this thickness of concrete withstand the natural loading of loose earth, which is certain to result from the kind of soil described in the inquiry, even though there may be no water in the surface drift.

It appears to me that, in sinking through soil of this kind, better results would be obtained at less cost by constructing the lining on the surface, on the chosen site of the shaft, before starting the excavation. In this method the earth is excavated from within and beneath the lining, and the latter is built up and allowed to sink as the work proceeds downward. This plan avoids the necessity of resorting to temporary cribbing.

Sinking a Mine Shaft in Indiana

Permit me to refer, in this connection, to a shaft 11 ft. 4 in., by 16 ft. 11 in., inside dimensions, which we are about to sink in Indiana. The first rock ledge is about 32 ft. below the surface, and we estimate that the hydrostatic pressure that is liable to come on the concrete at that point may reach 2000 lb. per sq. ft., while the earth pressure at a depth of 32 ft. will be about 1800 lb. per square foot.

In this case we expect to make the lower 13 ft. of the shaft lining 18 in. thick; the next 11 ft., 15 in. thick and the upper 8 ft., 12 in. thick. The steel used to reinforce the concrete will vary from 1 per cent. at a depth of 32 ft. to 0.7 per cent. at a depth of 10 ft. The lining will be built in sections above the surface level and lowered as the excavation progresses, without the use of any temporary cribbing. The long sides of the shaft will be supported, however, by inserting 6 x 8-in. buntons 15 in. center to center for the first 5 ft. at the bottom of the lining; 18-in. centers for the next 9 ft. above and 2-ft. centers from that point to the surface. This will make the longest unsupported walls in this shaft the two end walls, which are each 11 ft. 4 in. long in the clear.

In order to facilitate the sinking of the concrete lining, we are arranging to chamfer the lower edge of the walls to an angle of 45 deg. Because there is only soft earth to be encountered, in this case, we shall use no metal shoe under the lining while sinking. I would recommend, however, if the same method is adopted in sinking the shaft referred to in the previous inquiry, it would be better to use a steel shoe underneath the lining, on account of the soft shales encountered in the drift.

FRED A. KREHBIEL,
Chicago, Ill. Prest. Krehbiel Co.

Letter No. 3—Before attempting to reply to the inquiry of "Engineer," in reference to sinking a 10 x 17-ft. shaft and concreting the first 40 ft. of the excavation with a 7-in. concrete wall, let me say that it would be both interesting and important to know whether there is water to be encountered in the sinking and how much. The method to be recommended will also depend on knowing the extent of the property, which will determine both the life of the shaft and the character of its equipment.

However, since the first 40 ft. of this shaft must be sunk through 3 ft. of yellow clay, 1 ft. sandy clay, 7 ft. yellow clay, 12 ft. sandy shale and 17 ft. of soft shale, as stated in the inquiry, and assuming that there is considerable water to be encountered, I would not recommend the use of temporary cribbing. I would start the excavation by sinking 10 or 12 ft. through the clay, provided this would stand without caving. Then, having leveled off the bottom, begin the concrete wall at the foot of this hole and carry it up, say 15 or 20 ft. above the surface of the ground.

It will now be necessary to employ a derrick to hoist the material excavated from within this wall and dump it on the surface. From this time on, the excavation must be carried on uniformly all around the shaft, so as to enable the concrete lining to sink gradually and regularly on all sides. This must be carefully watched. The weight of the concrete wall will cause it to sink as the earth and rock are excavated beneath it, if care is taken to prevent any binding by reason of one side sinking more rapidly than the other.

Concrete Wall Built as Shaft Is Excavated

As the excavation proceeds and the wall sinks, more concrete is added above. This process is continued until the rockbed that is intended to form the support of the lining of this section of the shaft is reached. The inquiry states that the underlying strata consist of various thicknesses of rock, shale, slate, soapstone, sandstone, fireclay and coal. Much of this may prove to be dangerous ground, requiring to be well timbered or otherwise protected by wall plates.

Let me say here that if this is a large proposition it would be far better to line the entire shaft with concrete down to the coal, as that would make a more permanent lining and give better results. It is important to determine the proper size of timber or thickness of concrete to use, in accordance with the conditions existing in the strata.

"Engineer" states that the concrete wall will be 7 in. thick for the first 40 ft. of the excavation. In my opinion this is very light for the support of the strata

he has described, unless the concrete is heavily reinforced with iron or steel. The thickness of a concrete wall for lining a shaft should always be greater than that shown by the actual calculation. This will give a margin of safety, which is important in such work.

The method of sinking a concrete wall from the surface to bedrock, as described here, is not new and has found much favor with mining engineers, who are using it very largely in shaft sinking today. By avoiding the expense of timber for cribbing, it will generally be found that the sinking of a concrete wall in this manner is not as expensive an operation as might at first be thought.

Kingston, Penn. H. G. DAVIS.

Extinguishing Fire in a Gassy Mine

Letter No. 4—The inquiry of a Wilkes-Barre, Penn., fireboss, *Coal Age*, June 9, p. 1012, and the letter of another fireboss, at Punxsutawney, June 23, p. 1090, have provoked some discussion in this vicinity and that is my excuse for offering the following remarks, which I will endeavor to make as brief as possible:

First, let me say that a mine fire cannot be fought successfully in a magazine article or at long range and, for this reason, a writer is always at a disadvantage. One must be on the ground and observe and study the conditions as they exist or as they arise. Each fire presents its own problems and each requires individual treatment.

But, before attempting to describe how we ought to proceed to extinguish this fire, let us look for a moment at the conditions described, and hope that they do not exist. For instance, we are told that the ventilating air current is directed into the outside chamber by a canvas hung across the intake and haulage road. Six of these places are said to be generating gas. To permit a condition of this kind to exist in a gaseous mine is, in my opinion, a crime that should be punished by a severe penalty. Let us hope, however, that such a condition does not exist in any of the coal mines near Wilkes-Barre, where so much gas is generated.

CONDEMNS THE USE OF CANVAS IN A GASSY MINE

The use of canvas for directing ventilation in the mines in this valley should be limited to cases of actual necessity. The use of canvas on the gangway road and at the mouth of each of these six places cannot be too highly condemned from the standpoint of both safety and economy.

Now, in regard to putting out this fire, assuming that the roof is good and other conditions favorable, I would first station a man at the mouth of the outside chamber to see that the canvas on the haulage road was kept in place at all times, so as to prevent any stoppage of the ventilation in these chambers, which would allow gas to accumulate in them and produce a very dangerous condition. I would then proceed to fight the fire in the ordinary manner, loading the burnt material out in mine cars.

If conditions were not favorable to fight the fire, I would then make the necessary arrangements to seal off the place by closing the gangway at a point just inside of the last crosscut. This could easily be done by putting up a built-in frame, having a door that can be closed when the necessary preparations are completed. A couple of good helmet men would soon be able to close the openings between the door posts and the ribs, with canvas, which should be planked over as soon as possible. This will take care of the fire until the permanent stopping or seal outside of the one described above has been erected. This seal should also contain a small door, say about 3 x 5 ft., which will permit of an examination of the fire area in a few days, by men wearing oxygen breathing apparatus. This was done at the No. 3 shaft of the Woodward colliery of the Delaware, Lackawanna & Western Coal Co. a few years ago.

In conclusion, let me add that my experience of many years in the mines of this valley shows that, in attempting to seal off a mine fire, an explosion of gas is liable to occur. In this particular case, however, I do not think this would happen, as the products of combustion, or the inert gases given off by the fire, would render any methane or firedamp mixture nonexplosive. Should an explosion take place its force would be very slight. Then, if the temporary seal was quickly replaced, there would be no danger of any further explosion.

Wilkes-Barre, Penn. AJAX.

Letter No. 5—In considering the matter of extinguishing a mine fire, it is generally the case that a number of conditions must be assumed. The fire described in the inquiry of "fireboss," *Coal Age*, June 9, p. 1012, presumably was discovered by him when making his rounds. It could not have gained much headway, judging from the account, as it was confined to a somewhat limited area and in an advantageous location to be handled.

Assuming that the coal is highly inflammable, however, and gas being generated at the face of the heading, the situation calls for prompt action on the part of the fireboss. If he decides that he cannot handle the fire alone, he should tear down at least one or two sections of the canvas brattice to prevent its catching fire. Then, having torn away the brattice at the crosscut so as to short-circuit the air at that point and prevent the current passing through the rooms from reaching the fire, he should hasten to secure help and get water to the fire as quickly as possible.

It is possible that this fire can be subdued with water, provided both men and water are available. This is a question for the fireboss to determine, he being the one most familiar with the conditions. Should he decide that the situation cannot be handled in this manner, however, it will be necessary to adopt some means of sealing off the fire before it has gained further headway. Located at the head of the entry, some distance inside of the last crosscut, the work of sealing it off should not be difficult. The main obstacle to be overcome will be the smoke and heat generated by the fire.

As quickly as the needed material can be brought to the place and men secured, the work of building the stopping inside of the last breakthrough should be started, and this should be carried on without interruption. There should be enough men available to relieve at once any that may be overcome. In the meantime, the air current passing through the rooms

on the intake must be carefully watched, so that the mixture of gas and air does not become dangerous.

The gas-charged air from the rooms should not be permitted to reach the fire, but should be short-circuited and passed into the return airway at a safe distance back. It should be safe enough to tear down all the brattice inside of the last crosscut, since the gas generated at the head of the entry will be burned as fast as it issues from the coal, and no accumulation of methane would take place in that part of the heading.

The success of the entire operation will depend largely on the judgment and prompt action of the fireboss when the fire is discovered. The situation demands a cool head and calm, intelligent judgment.

Thomas, W. Va. W. H. NOONE.

Drilling and Shooting Coal

Letter No. 2—In his letter on "Drilling and Shooting Coal," *Coal Age*, June 30, p. 1129, I. J. Osbun has well drawn attention to the previous article on that subect by F. C. Pick, June 9, p. 990. The conditions described by Mr. Pick, as prevailing twenty years ago, in respect to the careless handling of explosives in proximity to flaming lamps and torches, have not been considered seriously by superintendents and foremen as an element of danger, until quite recently.

I recall a statement made in a recent book on coal mining, reading somewhat as follows: "As is generally the case, it needed a great disaster to impress upon the American people the necessity for conducting so hazardous a business as coal mining must ever be, under legal restrictions and under officials who have theoretical as well as practical training." That statement supports my contention that any mine official who violates the coal-mining laws of the state or disobeys instructions should be prosecuted, whether he is a superintendent, foreman, assistant foreman, fireboss, shotfirer, timberman, trackman or miner. He should be prosecuted and, if found guilty, suitably punished.

Carelessness in the drilling and shooting of coal has caused many disasters that might have been avoided had the foreman given the proper instructions to his men when making his daily visits to their working places. Any mine foreman worthy of the name knows his duty in this regard, and no matter what experience a miner may have, the foreman should not neglect to observe closely his methods and give him needed instructions. This is necessary, because conditions differ in almost every mine. The coal is either harder or softer, and there are peculiarities in every seam that must be guarded against, or the roof conditions may require close attention.

The suggestion of taking the drilling and shooting of coal out of the hands of the miner and employing a picked crew of men for this work is not a new idea. It was tried twenty years ago with the result that the mining of coal lost its dignity as a trade. No first-class miner was willing to load coal at 17½ c. per ton, and this work fell into the hands of men having brawn and muscle, but knowing nothing of coal mining. A great number of these men were killed by falling roof and coal.

This condition has naturally developed a scarcity of coal miners. Where machines are used to mine the coal, there is a job of loading it into the mine cars for any Tom, Dick or Harry that comes to the mines. No heed is given as to whether the man knows anything about a mine.

Now, what is needed to make the mining of coal a first-class occupation is to employ experienced miners at the working face and make them responsible for the training of less experienced men. In my opinion, every person seeking employment in a coal mine should pass an examination that would show how much he knows in regard to the mining of coal.

The laws relating to the drilling and shooting of coal, in Colorado, are second to none, and if the shotfirer performs his whole duty as required by the law, good results will follow. It is true that the refusal of a shotfirer to fire a shot that he considers unsafe may make him some trouble, because it reduces the output; but, on the other hand, the firing of such a shot may cause an accident for which the shotfirer himself will be held responsible.

Any shotfirer who will not act on his own judgment and refuse to fire a shot that he considers unsafe is wholly unfit for the position he holds. One of the greatest difficulties with which most shotfirers have to contend is the large territory they are compelled to examine, in many mines. To make the examination in the allotted time, the man is then unable to properly perform his work and, as a result, windy shots and missed holes are of frequent occurrence. He is fortunate indeed if these do not result in a more serious disaster.

My conclusion in this matter is that the most effective remedy to apply is to elevate the mining of coal to the standard of a first-class occupation. One experienced miner, 45 or 50 years of age, will drill, shoot and load 10 tons of coal a day, under favorable conditions, while two younger men, having less experience, though working together, will not show the same efficiency.

Notwithstanding this fact, there seems to be a tendency on the part of mine superintendents and foremen to fill their mines with the younger men, while they themselves are kept in a state of anxiety, fearing that someone will be injured or killed because of his lack of experience in the mining of coal.

Walsenburg, Colo. ROBERT A. MARSHALL.

Duties of Mine Examiners

Letter No. 6—Kindly allow me to refer, if not too late, to the letter of Ostel Bullock, *Coal Age*, May 26, p. 926. Speaking of the duties of mine examiners (firebosses), Mr. Bullock says, "The rules of the mine must largely govern the examiner in respect to keeping the men out of a place where he has found a loose rock."

This is only another instance showing the need of universal laws controlling the mining of coal in a general way, in the different coal-producing states. I refer only to laws respecting general safety and do not mean to include laws relating to conditions that vary in different mines and districts. If there were general laws that were alike in all mines regulating the practice in respect to the discovery of a danger and its removal, the training of men would be the same all through, and when they went from one mine to another they would understand the general practice.

To illustrate my meaning more clearly, let me refer to another statement in the same letter, which is, "Should the mine manager fail to read the report or neglect to have the danger removed, and the men proceed to work in the place, he is responsible for any accident that may happen, and the examiner is exempt from blame, as he did his duty and made his report."

I agree with Mr. Bullock that the examiner is exempt from blame when he has placed the danger signal required by law, which is a warning to all men to keep out of the place. I fail to see, however, that the mine manager (foreman) is responsible for the results of men violating the law by passing the danger signal.

THE MEN TO BLAME FOR VIOLATING THE LAW

It is quite true that the mine manager did not, as yet, either send a timberman with instructions to make the place safe, or authorize the men to do that work for themselves. But the fact remains that these men violated the law, which forbids them to pass a danger signal unless authorized by the mine manager to proceed and make the place safe for work. I want to ask, Is the mine manager to blame for this violation of the law by the men? Did he not have a right to expect that the men would remain out of that place when it was reported as being unsafe for work and a danger signal placed at the entrance?

As I view the situation, the men were themselves to blame, as they should have stayed away from the place until it had been made safe or until they were authorized to do the work themselves. Passing the danger signal was a willful violation of the law on their part.

I agree with Mr. Bullock when he says, "There are many foreigners working in the mines who are wholly incompetent to keep themselves safe and who are dependent on the mine officials in this respect." That includes many who can read and speak the English language. In this case, however, the delay or failure of the mine manager to order the work done that would make the place safe is one thing, and the violation of the law by the men is quite another thing. The latter, in my opinion, was the direct cause of the fatal results.

West Leisenring, Penn. R. W. LIGHTBURN.

Valuation of Coal Lands

Letter No. 1—I was interested in the inquiry and reply relating to the valuation of coal lands, *Coal Age*, June 2, p. 970, as this is a question that often requires serious consideration in the extension and development of coal properties.

In many places where the coal lies at the shallow depth of only 160 ft. mentioned in this inquiry, it is possible to judge more or less accurately in regard to the uniformity of the coal beds by studying the character of the overlying surface, which will often reveal the possibility of disturbances that might be expected to affect the coal seam below. Such observations, however, do not give positive assurance that the coal beds are undisturbed and are not faulted or eroded.

In seeking to place a value on coal properties, regard must be had to the surface valuation, as well as to the underlying deposits of coal or other mineral. The probable effect of the extraction of these deposits on the surface improvements must also be considered. It must be remembered that the actual extraction of coal will fall short of the solid contents of the seam, and allowance must be made for this waste. The percentage of extraction will depend on numerous conditions affecting the method of mining adopted. The value of the output per ton must be estimated in the light of an intimate knowledge of the working conditions and will be subject, moreover, to the fluctuations of the market, which cannot be forecasted and must therefore constitute an element of uncertainty.

The available tonnage underlying this 360 acres of land, for a 6-ft. seam lying flat, is readily estimated by multiplying the area of an acre, 43,560 sq.ft., by the number of acres and that product consecutively by 62.5, the weight of a cubic foot of water and the specific gravity of the coal. The final product divided by 2000, for short tons, or 2240, for long tons, will give the solid contents of the seam, assuming a uniform thickness throughout. Allowance must then be made for an estimated loss in the working of the seam.

In case the seam is inclined, however, the tonnage per acre will be greater and must be found by dividing the tonnage for a flat seam by the cosine of the angle of inclination. Should there be marked changes in the depth of the seam, it will be necessary to calculate the tonnage of each section separately. The allowance for waste in mining will be less where the longwall method is used than where the room-and-pillar system is employed. C. MCMANIMAN.

Rawdon, Quebec, Canada.

Haulage Economies

Letter No. 1—I was greatly interested in reading D. L. C.'s letter dealing with mixed haulage in mines, *Coal Age*, July 14, p. 69. He speaks of being "troubled with motors frequently stripping their gears." He also states that "the mine cars are too heavy for men to handle, as they have a capacity of 2½ tons." I offer the following suggestions in a spirit of sincere coöperation, hoping that they may help him to overcome his difficulties. If they do, I shall feel that the time was well spent.

Speaking of cars carrying 2½ tons of coal as being "too heavy for men to handle," let me say that there are mines where men are handling such cars with comparative ease. The cars, however, are equipped with roller bearings, which explains how that is possible. In this connection my mind reverts to two articles that appeared a short time ago in *Coal Age*, one entitled "Haulage Economies," Vol. 10, p. 34, and the other "An Interesting Dynamometer Test," page 1000 of the same volume. I found these articles indexed in my file, and they show clearly the great saving of roller-bearing cars as compared with cars mounted on plain bearings

The dynamometer test that formed the subject of the article last mentioned was conducted at the Coal Brook colliery of the Delaware & Hudson Co. The test showed that it required 2½ times as much power to keep the plain-bearing cars running as compared with that required where the cars were equipped with roller bearings

An interesting article on this subject appeared in *Coal Age*. July 7, p. 13. The article features the researches of P. B. Liebermann, chief engineer of the

Hyatt Roller Bearing Co., of Newark, N. J. The figures given in the tables show a remarkable difference between the coefficients of friction for cars mounted on the Hyatt flexible roller bearings as compared with those using plain bearings. From these tables I was surprised to learn that the coefficient for the Hyatt bearings ranges from 0.004 to 0.005, while the frictional coefficient for the plain cast-iron bearing on steel shafts is given as 0.03 to 0.20. These, certainly, are interesting comparisons in respect to the economy of mine haulage.

In closing, permit me to say that the case of D. L. C. may present some factors that would operate against the use of roller bearings. But it appears to me that the plain bearings of his cars are the chief source of his difficulties, and a change to roller bearings would eliminate much of the trouble he has mentioned.

W. J. KEARNS,
Uniontown, Penn. President Faith Coal Co.

Favoritism vs. Discipline

Letter No. 1—In some way the reading of one of the letters in last week's issue of *Coal Age* recalls an incident that occurred about two weeks ago at a mine near Cannonsburg. The incident points strongly to a practice that is all too common with many mine foremen, who permit themselves to overlook violations of the mine rules and regulations when the act concerns one who is a favorite, while meting out the full penalty of the law to another.

In the mine to which I have referred, the foreman in charge caught a man riding on a motor trip, which was against the rules of the mine. He charged him with a violation of the rules and laid him off for a day or two to think it over.

The following day one of the assistant foremen caught a miner on top of a locomotive. He told the motorman to put him off before starting out of the mine. The motorman replied by telling the assistant foreman to mind his own business, which it is quite evident he was doing. The assistant reported the matter to the foreman, who treated it lightly and gave it no attention.

Again, the next day, the boss driver caught a third man riding out of the mine on the rear of a motor trip and reported him to the foreman, who discharged him at once from the employ of the company. It so happened that the last man caught was the son of the assistant foreman, who had reported a violation of the rules the previous day.

A little later, the assistant went to the foreman and asked him if he thought it was a square deal to discharge his son for riding out on the rear end of a motor trip, while he did nothing to the man who rode out on the top of the motor the day before. The foreman promptly told the assistant that it was none of his business, adding that if he was not satisfied he could call at the office for his money.

The assistant thus summarily discharged had been in the employ of the company for sixteen years and was as good a man as ever went down into a mine. His discharge came as the result of his desire to see fair play and discipline in the mines. There may be something in the fact that this assistant had just passed the examination and received his papers making him eligible to mine foremanship. How this may be, I cannot say, but the incident appeals to me as one of the worst illustrations of favoritism, resulting in the lack of discipline in the mine, of which I know. RIXEY.

——, Penn.

Mine Lamps

Letter No. 8—To my mind, the previous letters on "Mine Lamps" have favored too largely the use of carbide lamps in the mine. It is right that the miner should have a clear, bright light so that he can see what he is doing, and in that respect the carbide lamp is superior to the common oil lamp. Its use, however, must naturally be restricted to mines generating no gas.

For a long period of time I worked in French mines where lamps of the Wolf type, burning benzine, were used exclusively. The light was very satisfactory and the lamps gave ample warning when the mine air was unsafe.

The good results obtained when the electric cap lamp is used and given a fair trial seem to be sufficient reason, however, for advocating their use in all mines. It is my belief that if the miner used this lamp exclusively, more attention would be given by operators to provide ample ventilation in mines and there would be less fear of the ignition of gas by the sparking of wires and commutator brushes on the haulage roads.

It is a long time since I took my first oil lamp and went down into the mine. The lamp was cumbrous and heavy, containing oil and wick for a ten-hour shift. It was soldered to a spike about 9 in. long and ⅜ in. square, in cross-section. One end of this spike was sharpened to a point, so that the lamp could be stuck to a post when desired. A belt was worn about the head for the support of the lamp and it was a torture to carry such a weight all day long. The weight of a small oil lamp, such as is used in the mines today, is nothing to be compared with that of the lamp we used at that time.

Not long ago I decided to work in one of the gaseous mines in the southern part of this state. I wanted to do so in order to become familiar with the room-and-pillar work practiced in that region. Knowing that samples of the mine air frequently showed as high as 12 per cent. of methane, I expected to find safety lamps used exclusively in those mines. Instead, however, nothing but carbide lamps were in use. Although many explosions had occurred in that region, I was told that there was no danger, as the mines were well ventilated

In closing, let me say that I am a strong advocate of the electric cap lamp, as it gives a strong light, does not vitiate the air and requires no time to be lost in tending the lamp. The lesson taught by the terrific explosion in France, referred to in one of my previous letters, resulted in a law being passed forbidding the use of open lights in both French and Belgian mines. When modern machinery and appliances are being so generally adopted, I see no reason why the most modern type of mine lamps should not be more generally used. I say, Boost the electric cap lamp, as being the safest and best light for use in the mines.

Peru, Ill. GASTON LIBIEZ.

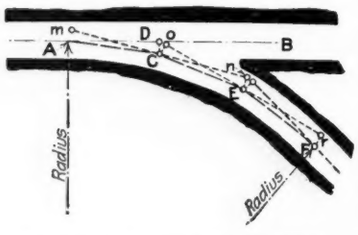
Inquiries of General Interest

Driving an Entry on a Curve

Kindly explain the method of calculating the offset necessary to drive a heading on a curve, and the manner of giving points on the center line of the curve when the engineers place spads in the roof, on the center line of the main entry and indicate where the curve is to start and its radius. J. P. HAMBY.

Roda, Va.

Referring to the accompanying figure, let *A* and *B* be the engineer's spads on the center line of the main road, and assume that an entry 10 ft. wide is to be driven on a curve, starting from *A* and having a radius of 100 ft. The simplest method for a mine foreman to adopt is that which employs tangential deflections. The tangential deflection is an offset perpendicular to the tangent and is measured from the tangent to the end of the corresponding chord.



DRIVING A CURVED ENTRY

It is important to choose a chord of such length that the corresponding tangent will not run into the rib of the entry on the curve, and to avoid this the offset taken must be a little less than half the width of the entry. For example, in a 10-ft. entry, assume an offset of say 4½ ft. The required length of chord (*c*), for a radius $R = 100$ ft. and an offset $f = 4.5$ ft., is

$$c = \sqrt{2fR} = \sqrt{2 \times 4.5 \times 100} = 30 \text{ ft.}$$

Now, referring to the figure, mark or stretch a line between the points *A* and *B* on the main entry. Then, with the end of the tape held at *A*, measure 30 ft. to *C*, holding the tape so that the distance *DC* perpendicular to *AB* will be the given offset, 4½ ft. The point *C* thus found is on the center line of the curved entry.

In order to set the next point *E* on this curve, it is necessary to establish a backsight, or point *m*, making the offset *Am* 4½ ft., measured perpendicular to *Cm*. Now, draw a line from *m* through *C* and extend it to *n*, thus forming a new tangent *mn*. The point *E* is now fixed by measuring 30 ft. with the tape from *C* and offsetting from the tangent *Cn*, 4½ ft., as before. The offset *nE* is perpendicular to the tangent *Cn*. The point *E* thus found is on the center line of the curved entry.

To set the next point *F*, the same process is repeated, by establishing the backsight *o*, offset 4½ ft. from *C* and perpendicular to *oE*. Then, extending the tangent *oE* to *r*, offset the point *F* 4½ ft., at a distance of 30 ft. from *E*.

In this process, it is important to remember that the offset must be a little less than half the width of the entry, and the corresponding chord is then found by multiplying twice this offset by the radius of the curve and extracting the square root of the product, according to the formula previously given.

Handy Tonnage Chart

Has *Coal Age* a chart for converting pounds into short and long tons, without calculation?

New York City. COAL DEALER.

The chart on the opposite page has been designed specially by *Coal Age*, to meet this want so often expressed by shippers and dealers and will be found of great convenience.

Government vs. Coal Age Prices of Bituminous Coal

Kindly advise me of the prevailing price of Miller Vein, bituminous coal, f.o.b. cars at mines. We have a contract with a certain concern based upon and governed by the price set forth in *Coal Age*, relating to the South Fork, Miller Vein. Since the new Philadelphia and Washington scale was adopted by the agreement of the bituminous operators with the Government, fixing the price of coal at $3 per ton, the parties to our contract are trying to get away from their obligation. The contract was drawn for a period of three years, beginning Apr. 1, 1917, and was to be governed by the price set forth for this coal in *Coal Age*. We ask that you kindly advise us of the facts bearing on this case. OPERATOR.

——, Penn.

At the present time, the only bituminous quotations prevailing in the Philadelphia market are those based on the agreement of the bituminous coal operators with Secretary Lane, fixing the price of bituminous coal at $3 per net ton (2000 lb.) for mine-run coal, and $3.50 per net ton for lump coal.

Regarding the contract to which you have referred, we beg to advise that this is not at all an uncommon way of selling bituminous coal, the sale to be governed by the prevailing price at the time of sale.

For a short time immediately following the adoption of the agreement between the bituminous operators and the Government, the question of price control was rendered very uncertain by reason of the fact that a leading official of the Government refused to give his sanction and thus fully ratify the agreement, which had already been broadcasted over the country by the daily press.

During this period of uncertainty and pending a more definite statement by the Government, *Coal Age* continued to publish the price of coal in line with previous quotations.

The agreement with the Government has now been fully ratified and established, and the price named governs the sale of all bituminous coal.

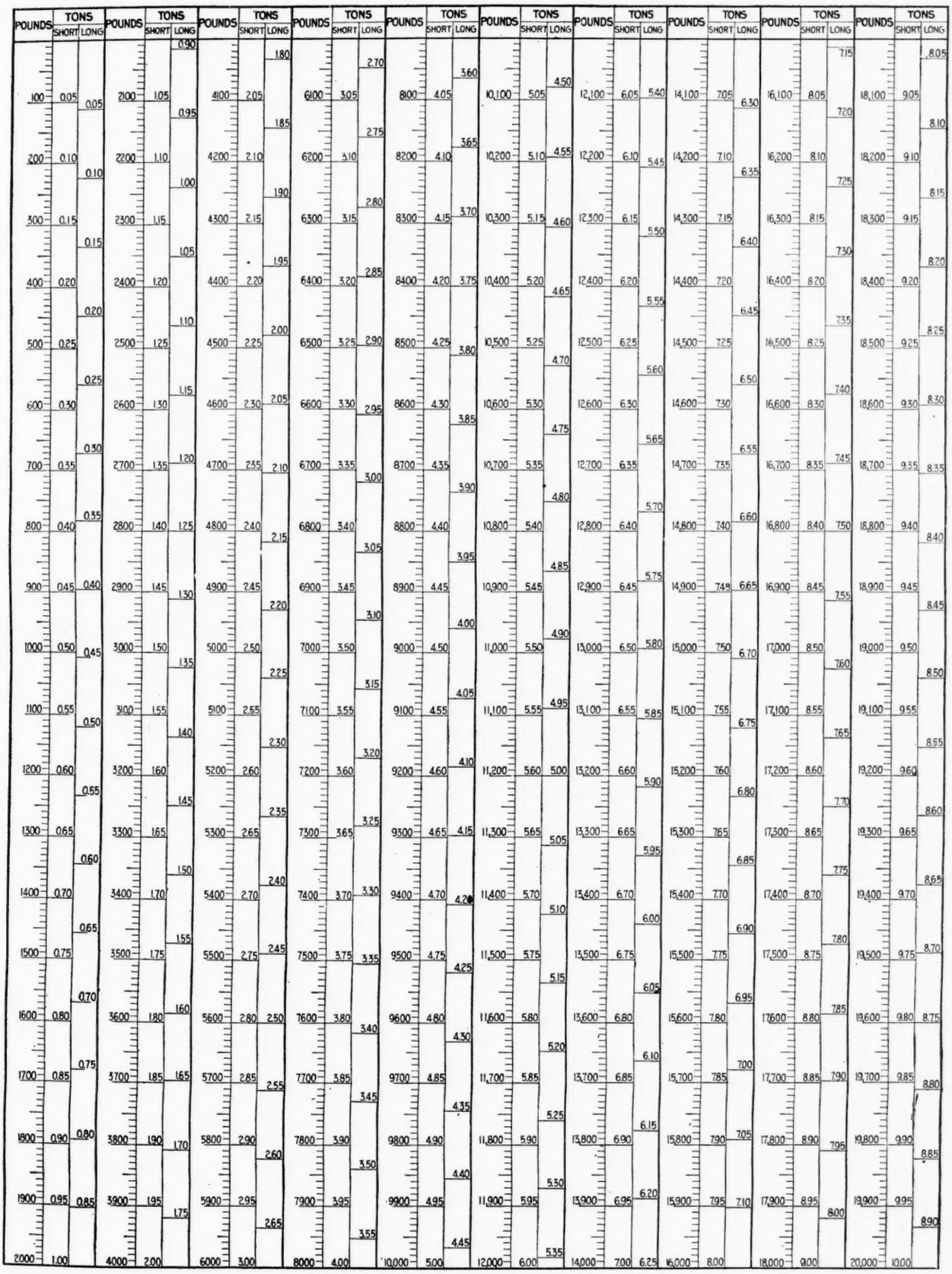


CHART FOR CONVERTING AVOIRDUPOIS POUNDS INTO SHORT AND LONG TONS, EXPRESSED DECIMALLY TO 20,000 LB. OR 10 SHORT TONS

Examination Questions

Illinois Mine Managers' Examination Springfield, June 11, 1917

(Selected Questions)

Ques.—Give the names of the American Devonian; it is subdivided into four groups of strata representing four periods.

Ans.—According to Le Conte, the American Devonian Age is divided into the following four periods: Catskill, Chemung, Hamilton and Corniferous.

Ques.—In a coal field two miles square, both mine openings are at the lowest point of the seam within the property. From these openings, the seam rises on a grade of 2½ per cent. for a distance of 6000 ft. The depth of strata at the opening is 210 ft., and the entire surface is level. The mine is ventilated by a force fan 15 ft. in diameter, which is found to be unable to supply the lawful quantity of air at the face of the workings. What means would you adopt, in this case, to insure the amount of ventilation required by law? Show by a sketch or by calculation the reason for your answer.

Ans.—Assuming that the shortage of air has occurred when the development of the mine has reached 6000 ft. from the opening, the simplest and most practical method to adopt, in order to increase the circulation of the air in the mine, would be to sink an air shaft at the face of the workings.

The main reason for adopting this plan is that the depth of cover at this point is only 60 ft. This is ascertained by calculating the rise of the seam for a grade of 2½ per cent. in a distance of 6000 ft., which is $6000 \times 0.025 = 150$ ft. Then, since the depth of the shaft openings at the lower point of the seam is 210 ft., the depth of air shaft 6000 ft. up the pitch will be $210 - 150 = 60$ ft.

By the sinking of the air shaft at or near the head of the pitch, the circulation in the mine can be made wholly ascensional, the air entering the downcast shaft at the lowest point of the seam and ascending the pitch to the air shaft, which will then be the upcast for the entire mine. This will make an ideal system of ventilation and the natural air column formed by the pitch of the seam will greatly assist the work of the fan.

Ques.—An entry runs N 46° 54′ E, and the rooms turned off this entry runs S 61° 21′ E; what angle do these rooms make with the entry?

Ans.—In this case the bearing of the entry lies in the northeast quadrant and that of the rooms in the southeast quadrant. In order to find the angle that the rooms make with the entry, it is necessary to subtract the sum of these bearings from two right angles, or 180 deg.; thus, the sum of the two bearings being 108° 15′, the required angle between the entry and the rooms is $180° - 108° 15′ = 71° 45′$.

Ques.—The old workings in a mine cover 20 acres, and the average height between roof and floor, over this area, is 2 ft. If this space is filled with marsh gas (CH_4), how much of that gas will be given off into the roadways of the mine when the barometer falls from 27.5 to 27 inches?

Ans.—The area of an acre is 43,560 sq.ft. Therefore, the cubic contents of 20 acres, for an average height of 2 ft., over this area, is $20 \times 2 \times 43,560 = 1,742,400$ cu.ft.

Assuming a constant temperature in the workings, the expansion of air or gas contained in this space is in the inverse ratio of the pressures, which is $27.5/27 = 55/54$. The increase in volume, or the volume of gas thrown off, owing to this fall of pressure is, therefore, 1/54 of total volume, or $1,742,000 \div 54 = 32,266+$ cu.ft.

Ques.—If the steam in a boiler is 270 deg. and the feed water is at 110 deg., how many units of heat will be necessary to add to this water to turn a pound of it into steam?

Ans.—As taken from the steam tables, which are necessary to give an intelligent answer to this question, the heat content of steam at 270 deg. F. is 1170 B.t.u., practically, which is the total heat in the steam above 32 deg. The total heat in the water above 32, when at a temperature of 110 deg. F., is $110 - 32 = 78$ deg. The heat absorbed in raising water at 110 deg. to steam at 270 deg. is, therefore, $1170 - 78 = 1092$ B.t.u. per pound.

Ques.—With a fan 8 ft. in diameter making 240 r.p.m., and passing 62,000 cu. ft .of air per minute, when the water gage stands at 1 in., what is the equivalent orifice?

Ans.—Since the water-gage reading given is presumably taken on the fan drift, it indicates the resistance of the mine. The equivalent orifice calculated from the quantity of air in circulation and this gage will be the equivalent orifice of the mine. It is found as follows:

$$A = \frac{0.0004\ Q}{\sqrt{w.g.}} = \frac{0.0004 \times 62,000}{\sqrt{1}} = 24.8 \text{ sq.ft.}$$

The size and speed of the fan are not required here to find the equivalent orifice of the mine. They are of value only for ascertaining the equivalent orifice of the fan should that be required. The process of finding the equivalent orifice of the fan in this case has been explained in answer to a similar question in the last issue of *Coal Age*, page 173.

Ques.—The barometer at the top of a shaft reads 28.3 in. and at the bottom, 30.9 in.; what is the depth of the shaft from the surface?

Ans.—It is customary to allow 900 ft. of depth for each inch of increase in barometric reading. More accurately, however, 1 in. of barometer corresponds to an air column of 920 ft. under normal atmospheric conditions. This would make the depth of the shaft in this case $(30.9 - 28.3)920 = 2392$ ft. Allowing only 900 ft. for each inch of barometric reading, the depth of the shaft would be $(30.9 - 28.3)900 = 2340$ ft.

Current Prices—Materials and Supplies

IRON AND STEEL

PIG IRON—Below are the present quotations, with a comparison of a month and a year ago:

	July 31, 1917	One Month Ago	One Year Ago
CINCINNATI			
No. 2 Southern foundry	$49.90	$47.90	$16.90 to 17.90
No. 2 Northern foundry	52.26	....	19.76 to 20.26
NEW YORK			
No. 2X Northern foundry	54.25	50.25	19.70 to 20.25
No. 2 plain Northern foundry	53.75	49.25	19.50 to 20.00
BIRMINGHAM			
No. 2 Southern foundry†	47.00	45.00	14.00
CHICAGO			
No. 2 Northern foundry	55.00	55.00	19.00
PITTSBURGH			
Bessemer iron*	55.95	55.95	21.00
Basic iron*	53.95	50.00	18.00

*These prices include the freight charge from the valley to the Pittsburgh district. †Delivered Tidewater, New York.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Pittsburgh	New York July 31, 1917	New York 1 Yr. Ago	St. Louis	Chicago	San Francisco	Dallas
Beams, 3 to 15 in.	$4.50	$5.25	$2.50	$5.05	$5.00	$7.75	$6.00
Channels, 3 to 15 in.	4.60	5.25	2.50	5.05	5.00	7.75	6.00
Angles, 3 to 6 in., ¼ in. thick	4.50	5.25	2.50	5.05	5.00	7.75	6.25
Tees, 3 in. and larger	4.50	5.30	2.50	5.05	5.05	7.75	6.25
Plates	9.00	9.00	2.90	8.05	8.00	10.00	9.00

BAR IRON—Prices in cents per pound at cities named are as follows:

	Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
July 31, 1917	4.00	4.65	4.45	4.85	5.00

NAILS—Prices per keg from warehouse in cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Wire	$3.50	$4.00	$4.00	$4.05	$4.10
Cut	3.75	4.00	4.85	....	....

TRACK SUPPLIES—Prices are base per 100 lb. f.o.b. Pittsburgh, and from warehouse at cities named:

	Mill, Pittsburgh	Cincinnati	St. Louis	Denver	Birmingham
Standard railroad spikes	$3.85 to 4.00	$4.75	$5.75	$4.85	$6.00
Track bolts	7.00 to 7.50	7.00	6.25	5.55	6.75
Standard section angle bars	3.00 to 3.25	....	....	4.40	....

COLD DRAWN STEEL SHAFTING—From warehouse to consumers requiring fair-sized lots, the following discounts held on Apr. 30, 1917:

Cleveland	Cincinnati	St. Louis	Denver	Birmingham
List + 10%	+15%	+10%	+35%	+30%

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Cincinnati	St. Louis	Denver	Birmingham
Straight	$6.75	$6.35	$7.75	$6.50
Assorted	7.25	6.50	8.00	7.00

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York July 31, 1917	New York 1 Mo. Ago	New York One Yr. Ago	Birmingham	Chicago	St. Louis	San Francisco	Dallas
4 in.	$68.50	$68.50	$34.00	$63.00	$68.50	$67.00	$75.00	$72.00
6 in. and over	65.50	65.50	31.00	60.00	65.50	64.00	73.00	69.00

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per 100 lb. f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh July 31, 1917	Pittsburgh One Year Ago	Chicago July 31, 1917	Chicago One Year Ago
Standard bessemer rails	$38.00	$33.00	$38.00	$33.00
Standard openhearth rails	40.00	35.00	40.00	35.00
Light rails, 8 to 10 lb.	83.00 to 84.00*	50.00	68.00	43.00
Light rails, 12 to 14 lb.	82.00 to 83.00*	49.00	67.00	42.00
Light rails, 25 to 45 lb.	75.00 to 80.00*	47.00	65.00	40.00

*Demand for light rails active and mills are obtaining premiums. Rerolled rails as valuable as new.

OLD MATERIAL—Prices per net ton in Chicago and St. Louis (including delivery to buyer's works and freight transfer charges):

	Chicago July 31, 1917	Chicago One Month Ago	St. Louis July 31, 1917
No. 1 railroad wrought	$35.00	$44.00	$36.00 to 37.00
Stove plate	18.50	24.50	18.00 to 18.50
No. 1 machinery cast	28.50	32.00	25.00 to 26.00
Machine shop turnings	17.00	20.00	19.00 to 19.50
Cast borings	17.50	19.50	17.50 to 18.00
Railroad malleable cast	29.00	35.00	29.50 to 30.00

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Birmingham	Denver
$0.14	$0.14	$0.16

PIPE—The following discounts are for carload lots f.o.b. Pittsburgh, as per basing card of July 2, 1917:

BUTT WELD

Steel Inches	Steel Black	Steel Galvanized	Iron Inches	Iron Black	Iron Galvanized
¾ to 3	42%	28%	¾ to 1½	33%	17%

LAP WELD

2	35%	22½%	2	26%	15%
2½ to 6	35%	22½%	2½ to 4	28%	15%
7 to 12	29%	15½%	4½ to 6	28%	15%
13 and 14	32½%	....	7 to 12	25%	12%
15	30%	....			

BUTT WELD. EXTRA STRONG PLAIN ENDS

¾ to 1½	40%	27½%	¾ to 1½	33%	18%
2 to 3	41%	28½%			

LAP WELD. EXTRA STRONG PLAIN ENDS

2	33%	21½%	2	27%	14%
2¼ to 4	36%	24½%	2¼ to 4	29%	17%
4½ to 6	35%	23½%	4½ to 6	28%	16%
7 to 8	31%	17½%	7 to 8	20%	8%
9 to 12	20%	16½%	9 to 12	15%	3%

From warehouses at the places named the following discounts hold for steel pipe:

	Black New York	Black Chicago	Black St. Louis
¾ to 3 in. butt welded	38%	42.8%	34.27%
3½ to 6 in. butt welded	28%	38.8%	27.27%
7 to 12 in. lap welded	20%	35.8%	21.27%

	Galvanized New York	Galvanized Chicago	Galvanized St. Louis
¾ to 3 in. butt welded	22%	27.8%	19.27%
3½ to 6 in. lap welded	10%	24.8%	13.27%
7 to 12 in. lap welded	10%	20.8%	6.27%

Malleable fittings, Class B and C, from New York stock sell at 5 and 5% from list price. Cast iron, standard sizes, 34 and 5%.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair-sized orders, the following amount is deducted from list:

	New York July 31, 1917	New York One Year Ago	Cleveland July 31, 1917	Cleveland One Year Ago	Chicago July 31, 1917	Chicago One Yr. Ago
Hot pressed square	List	$2.00	$1.65	$2.75	$3.00	$3.25
Hot pressed hexagon	List	2.00	1.50	3.00	3.00	3.25
Cold punched square	List	1.50	1.40	2.50	1.60	3.00
Cold punched hexagon	List	2.00	1.40	3.00	2.00	3.50

Semifinished nuts sell at the following discounts from list price:

	July 31, 1917	One Year Ago
New York	50%	50—10%
Cleveland	50%	60%
Chicago	50%	65%

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
¾ by 4 in. and smaller	30%	35—5%	35—5%
Larger and longer up to 1 in. by 30 in.	15%	20—5%	20—2½%

WROUGHT WASHERS—From warehouses at the places named the following amount is deducted from list price:

New York ..... $5.00 Cleveland ..... $4.50 Chicago $4.50

For cast-iron washers the base price per 100 lb. is as follows:

New York ..... $2.25 Cleveland ..... $4.50 Chicago $3.50

RIVETS—The following quotations are allowed for fair-sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	30%	30%	40%*
Tinned	30%	30%	40%*

*For less than keg lots the discount is 35%.

Button heads, ¾, ⅞, 1 in. diameter by 2 in. to 5 in., sell as follows per 100 lb.:

New York ..... $7.00 Cleveland ..... $6.85 Chicago $5.50

Coneheads, same sizes:

New York ..... $7.10 Cleveland ..... $6.95 Chicago $5.60

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Chicago	St. Louis	Birmingham	Denver
Cup	6	10½	6	8
Fiber or sponge	6¼	5⅝	6	15
Transmission	6¼	6	6	15
Axle	3½	4½	3	5
Gear	5	10	6	5
Car journal	4½	3½ to 7½	..	20

BABBITT METAL—Warehouse prices in cents per pound:

	New York July 31, 1917	New York One Year Ago	Cleveland July 31, 1917	Cleveland One Year Ago	Chicago June 29, 1917	Chicago One Year Ago
Best grade	70.00	50.00	70.00	46.50	70.00	50.00
Commercial	40.00	25.00	24.50	17.50	25.00 to 30.00	21.00

HOSE—Following are prices of various classes of hose:

Fire	50-Ft. Lengths
Underwriters' 2½-in.	65c. per ft.
Common, 2½-in.	40–10%

Air	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.55	$0.30	$0.25

Steam—Discounts from list

First grade... 30% Second grade... 30-5% Third grade... 40-10%

LEATHER BELTING—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
Cincinnati	40%	35%
St. Louis	45%	40%
Denver	40%	45%
Birmingham	35%	35%

RAWHIDE LACING—40% off list.

PACKING—Prices in cities named are as follows:

Valve and Stuffing-Box	Cincinnati	Denver	St. Louis	Chicago
Twisted plain, 25-lb. cartons	$1.35	$1.25	$1.25	$0.80
Twisted graphite, 25-lb. cartons	1.55	1.40	1.25	.90
Braided plain, 25-lb. cartons	1.35	1.40	1.50	1.00
Braided graphite, 25-lb. cartons	1.55	1.40	1.50	1.10
Steam (in 25- and 50-lb. cartons)				
First grade	1.00	.80	.80	.75
Second grade	.35	.60	....	.50
Piston (in 25- and 50-lb. cartons)				
Asbestos, duck and rubber	.90	.80	1.50	1.25
Flax, first grade	.45	.60	.60	.85
Rubber and duck	.75	.66	.75	.90

MANILA ROPE—For rope smaller than ⅝-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ⅜-in., 8 ft.; ½-in., 6; ⅝-in., 4½; 1-in., 3½; 1⅛-in., 2 ft. 10 in.; 1¼-in., 2 ft. 4 in. Following is the price per pound for ⅝-in. and larger, in 1200-ft. coils:

Boston	$0.34	New Orleans	$0.31
New York	.33½	Seattle	.31½
Denver	.36	St. Paul	.31½
Kansas City	.31½		

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York: July 31, 1917	New York: 1 Yr. Ago	St. Louis	Chicago	San Francisco
Galvanized	10-2½%	25-2½%	10-2½%	10-2½%	15%
Bright	20-2½%	35-2½%	20-2½%	20-2½%	5%

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard Thickness Per Lin.Ft.	Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
6-in.	.80	1½-in.	.45
4-in.	.60	2 -in.	.60
3-in.	.45	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure ..... 15% off

Air cells for low-pressure heating and return lines { 4-ply .... 58% off; 3-ply .... 60% off; 2-ply .... 62% off

LINSEED OIL—These prices are per gallon:

	New York: July 31, 1917	New York: 1 Year Ago	Cleveland: July 31, 1917	Cleveland: 1 Year Ago	Chicago: July 31, 1917	Chicago: 1 Year Ago
Raw in barrels	$1.16	$0.71	$1.20	$0.73	$1.21	$0.73
5-gal. cans	1.26	.81	1.35	.83	1.36	.83

WHITE AND RED LEAD in 500-lb. lots sell as follows in cents per pound:

	Red: July 31, 1917 Dry	Red: July 31, 1917 In Oil	Red: 1 Year Ago Dry	Red: 1 Year Ago In Oil	White: July 31, 1917 Dry and In Oil	White: 1 Yr. Ago Dry and In Oil
100-lb. keg	13.25	13.50	10.50	11.00	13.00	10.50
25- and 50-lb. kegs	13.50	13.50	10.75	11.25	13.25	10.75
12½-lb. keg	13.75	14.00	11.00	11.50	13.50	11.00
1- to 5-lb. cans	15.25	15.50	12.50	12.50	15.50	12.50

CALCIUM CARBIDE—Price f.o.b. cars at warehouse points in Eastern States is $82.50 per ton for Cameo, $87.50 for Union.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati	$13.50	Birmingham (clay)	$7.50
St. Louis, salmon	7.00	Birmingham (shale)	8.50
Denver	8.00		

FIRE BRICK—Price f.o.b. works:

	Cincinnati	Denver	Birmingham
Silica (per M)	$55.00- 60.00	....	....
Fire clay (per M)	48.00 50.00	$23.00	$22.00
Magnesite (per ton)	135.00-145.00	....	....
Chrome (per ton)	125.00-135.00	....	....

St. Louis—High-grade, $55 to $65; St. Louis grade, $40 to $50.

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York and Chicago:

	1-Ply c.l.	1-Ply l.c.l.	2-Ply c.l.	2-Ply l.c.l.	3-Ply c.l.	3-Ply l.c.l.
No. 1 grade	$1.15	$1.30	$1.45	$1.60	$1.75	$1.90
No. 2 grade	1.00	1.15	1.25	1.40	1.50	1.65

Asbestos asphalt-saturated felt (14 lb. per square) costs $6.50 per 100 lb.

Slate-surfaced roofing (red and green) in rolls of 108 sq.ft. costs $1.85 per roll in carload lots and $2.10 for smaller quantities.

Shingles, red and green slate finish, cost $4.75 per square in carloads, $5 in smaller quantities, in Philadelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York or Chicago:

	Carload Lots	Less Than Carload Lots
Tar felt (14 lb. per square of 100 sq.ft.)	$59.00	$60.00
Tar pitch (in 400-lb. bbl.)	15.00	16.50
Asphalt pitch (in barrels)	29.00	30.50
Asphalt felt	60.00	62.00

CORRUGATED SHEETS—Price of corrugated sheets (2½-in. corrugations) in cents per pound:

Gage		Cincinnati	Birmingham	St. Louis	Denver
18–20	Black	$18.00*	....	$0.092	....
28	Black	5.75*	....	.094	$0.10
18–20	Galvanized	22.50*	$0.11	....	....
28	Galvanized	8.75*	.12	.113	.12

*Price per square of 100 sq.ft.

HOLLOW TILE—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
Cincinnati	$68.80	$129.00
St. Louis	60.00	110.00
Denver, per ton	90.00	170.00
Birmingham	52.00	97.50

LUMBER—Price of yellow pine per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.	8 x 8 In. x 20 Ft.
Denver	$32.00	$42.00	$36.00
St. Louis	31.50	28.00	36.50
Birmingham	24.00	26.00	22.00

Lumber—Price per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft. and Under: Y.P.	Fir	Hemlock	2-In. T. and G. 10 In. x 16 Ft.: Y.P.	Fir
Kansas City	$44.00	$44.50	$43.00	$52.00	....
Seattle	18.50	18.50	18.50	18.50	$18.50
New Orleans	26.00	....	....	28.00	....
St. Paul	....	51.00	33.50	59.00	37.50

	8 x 8-In. x 20 Ft. and Under: Y.P.	Fir	Hemlock	Spruce	12 x 12-In., 20 Ft. and Under: Y.P.	Fir
Kansas City	$39.00	$35.00	$35.00	....	$45.00	$35.00
Seattle	18.50	18.50	18.50	$18.50	18.50	18.50
New Orleans	24.50	....	....	....	30.00	....
St. Paul	....	40.00	31.50	32.00	....	45.00

COPPER WIRE—Prices in cents per foot for rubber-covered wire in standard quantities of 1000 ft.:

No.	Denver: Single Braid	Denver: Double Braid	Denver: Duplex	St. Louis: Single Braid	St. Louis: Double Braid	St. Louis: Duplex	Cincinnati: Single Braid	Cincinnati: Double Braid	Cincinnati: Duplex
14	$13.10	$17.55	$31.60	$14.00	$16.00	$28.00	$13.75	$16.75	$32.00
10	28.55	32.25	63.95	28.30	31.80	63.85	27.10	31.00	55.55
8	40.80	45.05	89.75	40.70	44.70	88.90	36.85	41.75	79.30
6	64.50	69.15	....	....	69.10	....	75.25	79.75	159.50
4	94.15	99.95	....	....	110.35	....	108.15	113.65	....
2	143.30	150.15	....	....	161.00	....	161.50	168.00	....
1	180.55	194.35	....	....	211.00	....	210.00	218.50	....
0	233.75	233.75	....	....	256.50	....	264.50	264.50	....
00	....	....	....	....	316.00	....	324.00	324.00	....
000	....	....	....	....	385.00	....	398.00	398.00	....
0000	....	....	....	....	469.50	....	486.00	486.00	....

EXPLOSIVES—Price per pound in small lots at cities named:

	Low Freezing 20%	Low Freezing 40%	Gelatin 60%	Gelatin 80%	Black Powder*	Fuse†
New York	....	$0.26½	$0.33½	....	$2.35	....
Boston	....	....	.33¼	.40¾	....	....
Kansas City	$0.19	.25¼	.30¼	.36½	....	....
New Orleans	.20¼	.24¼	.29¼	....	....	....
Seattle	.17½	.23¾	.29¼	....	....	....
St. Paul	.19	.25¼	.32¼	.42¼	2.35	....
St. Louis	.15½	.21½	.29½	.34¾	1.95	....
Denver	.18	.24¼	.31¼	.41¼	....	....

*75%.

FREIGHT RATES—On finished steel products in the Pittsburgh district, including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, etc., the following freight rates are effective in cents per 100 lb.:

Baltimore	15.4	Minneapolis	32.9
Boston	18.9	New Orleans	30 7
Buffalo	11.6	New York	16.9
Chicago	18.9	Pacific Coast (all rail)	75.0
Cincinnati	15.8	Philadelphia	15.9
Cleveland	10.5	St. Louis	23.6
Denver	68.6	St. Paul	32.9
Kansas City	43.6		

Coal and Coke News

Harrisburg, Penn.

Appealing to the coal retailers to place humanity above profit in the fixing of anthracite coal prices, Thomas R. Fort, a member of the Federal Trade Commission, on July 26 stated that unless this was done government regulation of the prices was inevitable.

Mr. Fort spoke before the 30th annual convention of the Pennsylvania Retail Coal Merchant's Association.

Mr. Fort, who is a former Governor of New Jersey, said that a bill similar to the one that was passed by the Senate, which gives the government the authority to regulate the prices of coal, should be used "like a gun behind a door." He added that in days of national emergency like the present the patriotism of all American producers, consumers and retailers should be of the kind that would bring these matters to a successful conclusion by means of agreement and not by force.

He also intimated that the operators and carriers have "squeezed" the retailers to such an extent that they were obliged to make prices high in order to save themselves from financial disaster.

"If you think I am talking over your shoulders, I am perfectly willing to answer any charges you may think that I am laying against them," said Mr. Fort.

"One thing that may have caused the present high prices is the scare of last spring over the so-called shortage of coal. And I strongly feel that if the dealers were aware of the fact that the conditions were not as represented, they were guilty of a serious breach of the public's confidence, and are not entitled to sympathy.

"I sincerely hope that the Federal Trade Commission will not be asked to fix the price on anthracite coal or upon any other commodity. However, this is the thing that you are up against. The main cause for debate is just what constitutes a 'fair, just and reasonable profit.'"

Mr. Fort then added that he personally did not believe in government ownership, particularly if businesses can be run by business men in a business-like and honest manner.

Prominent coal and steel men in the western part of the state say they do not anticipate such a shortage in men by reason of the draft as seriously to cripple the steel and coal industry. They are relying upon the Government's industrial exemption system to protect them. This is of vital importance to the nation at this time.

The coal men believe that some readjustment will be necessary in the coal industry by reason of the draft, but believe that the readjustment will be made with the coöperation of the Government itself through the district exemption boards. One of the cardinal points of the universal service law is the protection of industries necessary to provide materials of war. The operators feel that it is entirely too soon to commence to complain about losing valuable men to the army.

The operators also feel that the industry is far better protected from disturbance by the draft system than it would have been under the volunteer system, as under the latter they would have had no choice or control and quite likely would have lost many indispensable men, because the type of excellent worker is also the patriotic type.

Under the draft system employers may go before the district exemption board with affidavits and claim exemption for all men drawn whom they feel to be indispensable to the continuance of the industry. Although such men may feel it their duty to accept the draft without making claim for exemption on any account, employers have the right to secure exemptions without the knowledge or consent of the men themselves.

Coal companies in the anthracite region expect to ask for the exemption from military draft of not only their miners, but laborers as well. This is regarded as necessary since skilled miners would be compelled to do the work of laborers if the latter are drafted.

This would seriously cripple the working force at the mines, and is not at all necessary, the operators say, inasmuch as the coal region can furnish its full quota of men without calling workers from the mines.

Coal operators and coal land brokers are both curious and anxious to see what effect the intention of fixing the price of coal at $3 a ton is going to have on the coal land market. This market has been unusually active for months past, and the high prices of mined coal have caused some sharp advances in coal land prices and heavy purchases thereof. Of late the demand for coal land and coal has been so urgent that coal tracts of a few acres have been finding a ready sale, and many small country mines have been opened and have been operating profitably. Coal land brokers do not take gracefully nor do small coal operators, to the $3 a ton rate fixed by the Government, under the price control bill, as at present drawn and likely to be enacted.

A man who forsakes his duties and undertakes to give orders to another employee takes himself out of the course of his employment and assumes powers which do not belong to him, thereby forfeiting his right to the protection of the state compensation act, according to an opinion rendered by Chairman Harry A. Mackey, of the state board, in the case of Hollister vs. Colonial Collieries Co.

Hollister was a sort of general utility man and while acting as ashman was asked by another employee to compel a third employee to hand over to him certain tools. When he attempted to get the tools Hollister was struck with a hammer. In so acting Mr. Mackey says he can not be said to have been furthering the interests of his employer and that there is no evidence in the record that there was any imminent danger of a fight between the men.

Mr. Mackey adds: "We can only regard the claimant in this case as a meddler or interferer in other men's affairs at a time when he ought to have been prosecuting his own work. This does not raise the question of the right of a peacemaker to compensation when he finds one employee is about to be assaulted by another." The opinion reverses Referee Champion.

State Chief of Mines James E. Roderick was on July 24 informed by Deputy Attorney General Hargest that he can issue certificates as mine foreman to ten applicants certified as having been passed by the examiners in the Fourteenth anthracite district. The question arose because in each case the statements showed that applicants had spent various periods as door boys, drivers, runners, bratticemen, laborers, and at other work about the mines, but that in no application was the service as "miner" given for as long a period as five years, as is called for by the mine law, and for this reason the chief of the department of mines asked for a ruling on the applications by the Attorney General's department as a matter of record.

Mr. Hargest held that if the board, composed of experienced miners, is satisfied the certificates must be issued.

The above case has no bearing whatever with the case where certificates are being held up by the department because the applicants took the examinations in the wrong districts.

The bill appropriating $75,000 for the State Department of Health to extinguish the Carbondale mine fire has been vetoed by the Governor because, as he said, there was no money for it and the task is one which the Department of Health should not be called upon to perform. Furthermore, it is not manifest that it is "a proper charge against the commonwealth." A similar bill making an appropriation to the department of mines was vetoed in 1913 by Governor Tener.

The Governor approved an appropriation for $30,000 for the use of the Topographic and Geological Survey Commission. The legislature voted $40,000, but the Governor was forced to make a $10,000 cut. He also approved an appropriation of $5000 to the Workmen's Compensation Commission to make a study of health and accident insurance.

The Governor has vetoed the repeal of the "Full Crew Act" of 1915. This bill provided for the suspension of the act of 1915 during the period of the war and six months thereafter.

The Public Service Commission in an opinion handed down by Chairman W. D. B. Ainey in the complaint of the Businessmen's Association of Lock Haven, Kistler, Lesh & Co., and the New York & Pennsylvania R. R. against the New York Central R.R., directs the railroad to strike from its tariff of rates for hauling bituminous coal from Clearfield and Center county mines to Lock Haven "increased local and proprtional rates" and to restore the rates existing prior to Sept. 20 last. The opinion is an exhaustive discussion of rates, including through rates, and the commission finds that the company has not justified the increases.

PENNSYLVANIA

Anthracite

Port Blanchard—Employees of No. 14 colliery of the Pennsylvania Coal Co. on July 26, fully demonstrated that they are imbued with the patriotic spirit and are following the advice of President Wilson in keeping the mine going and producing as much coal as possible. Nearly all the employees worked more than a shift and the result is that the colliery turned out the largest tonnage in its history. From 7 A.M. to 5 P.M. 3015 mine cars were dumped at the breaker, producing 8000 tons of prepared sizes while 204 railroad cars were loaded.

Valley View—An explosion of gas at the Good Spring Colliery, an operation of the Philadelphia & Reading Coal and Iron Co., resulted in the killing of one man and the probable fatal injury of four others, on July 24.

Minersville—The Pine Hill Coal Co. has mounted a high-power searchlight on the top of its breaker. An operator is on duty all night and swings the light about the colliery grounds at regular intervals, assisting the watchmen in their patrol of the plant.

Pittston—Ten thousand pounds of powder exploded at the plant of the Black Diamond Powder Co. at Dupont on July 26, destroying the drying house, but without injury to employees. The company produces blasting powder, almost exclusively for the anthracite mines. No shutdown of the industry was occasioned, since a duplicate plant was so near completion that the new drying house could be utilized at once.

Hazleton—On account of wartime conditions demanding the services of every available employee, the Lehigh Valley Coal Co. announced on July 27, that no vacations will be granted this summer.

Wilkes-Barre—A fall of roof in a gangway at the South Wilkes-Barre No. 5 shaft, of the Lehigh & Wilkes-Barre Coal Co., killed two men and seriously injured another on July 26, as they were on their way to their chambers. State and company officials are investigating the accident to determine the cause. The theory is advanced that the excessive heat may have had much to do with the weakening of the roof.

Mocanaqua—Scores of miners worked with feverish haste on July 24 to release Adam Kling from behind hundreds of tons of coal and rock in a shaft of the West End Coal Co. Kling is alive due to the efforts of men he had taunted about the danger he was in. Refusing to go back with others when a blast was fired, he was caught on the inner side of a huge mass of rock and coal.

Bituminous

Pittsburgh—The mines along the Monongahela River are working to capacity in order to fill orders. The coal trade along the local streams and pools is merely in its infancy it is believed and transportation facilities on the rivers are steadily improving. Every barge available is being used to carry coal between the mines and the mills along the water front. Having been warned that the supply of natural gas will

be short next winter, many of the large fuel consumers along the rivers are keeping their fleets busy storing coal for a possible shortage. New barges have been ordered and those now on hand are carrying fuel to the blast furnaces where it is being stored.

Connellsville—Employees of the H. C. Frick Coke Co. who were members of the National Guard when the war started or who have since enlisted will be paid part of their salaries or wage rates during their service, and every effort will be made to retain their positions for them until such time as they return to civil life.

Beaver Falls—W. H. Henderson of Pittsburgh, has recently purchased nearly a dozen large farms in the Hookstown district, and has started the development of a new coal field. Mr. Henderson has put to work several hundred men who are building a railroad spur to connect with the new line of the Panhandle now passing through Shippingport. He has also arranged for the erection of a large number of houses for miners. This is said to be one of the largest fields in this section.

Somerset—Coal operators of Somerset held a meeting in the Court House on July 25 when it was voted to give to the American Red Cross 10 cents for every ton of coal mined in the Somerset territory during the month of July. The money will be turned over to the Somerset branch of the American Red Cross.

WEST VIRGINIA

Interstate—Since the burning of the power plant of the Elkhorn Coal Corporation at Interstate, power for mines Nos. 44 and 64 has been supplied from the lines of the Monongahela Valley Traction Co. A substation has now been erected, from which to supply these mines.

Beckley—T. R. Ragland and associates have purchased about 50 acres of the Sewell coal bed from E. M. Canaday at Lester. It is the purpose of Mr. Ragland and those associated with him to develop this property.

The new town of Itmann on the Guyan River across from Elmore, will probably become a large coal mining center. This town has been laid out in streets on a large scale and will have four miles of macadam road. The owning company, the Pocahontas Consolidated Collieries Co., after whose president he town is named, will mine coal from 35 openings and a million tons a year it is estimated will be the output. This will equal approximately one-fifth of the total tonnage now handled by the Virginian Railway.

Bluefield—Following the suggestion of Governor Cornwell, the New River company, operating mines in Fayette County at Dunn Loop, Scarbo, Lochgelly, Whipple, Summerlee, MacDonald, Harvey, Carlisle, Prudence and Glen Jean, has published in a county paper an honor roll, giving the names of all employees who worked from June 19 to June 30 inclusive without missing a day. It is believed that the continued publication of such an honor roll will tend to increase production.

Fairmont — Workmen are busy at the Watson Building installing the new telephone exchange for the Consolidation Coal Co. This will conect the corporation's entire West Virginia division, there being telephones at every mine. Besides being of considerable service in connecting all the mines owned by the company, the exchange will be a large factor in the efficiency of the various office departments in the Watson Building. Six operators will be required to manipulate this exchange.

KENTUCKY

Owensboro—Suit has been filed in the Federal Court here by C. O. Gray, receiver, against the Nortonville Coal, Coke and Mining Co. and others, asking an injunction against operation of the mines in Hopkins County and that the property be put in charge of the Planters Bank and Trust Co., of Owensboro, for operation or that a receiver be appointed. A bond issue of $300,000 figures in the proceedings, which are directed against the coal company and bank named, the Norton Coal Mining Co. and the Monra-Warrior Coal and Coke Co.

Jenkins—Coal operations throughout this section are unusually active. Full day and night shifts are being worked and the last pay day was the largest ever known in the history of the Elkhorn field. The Consolidation Coal Co. is operating all of its mines full time, and the car service is greatly improved.

Roxana—Construction and grade work is being started on the development of the Frazier coal lands by the Smoot Creek Coal Co., of which John A. Webb, Whitesburg, is manager. Number 4 coal is being developed and the erection of a new town is under advisement.

OHIO

Athens—John C. Hewitt, of the Semi-Wellston Coal Co., announces the purchase for his company's new mine on the Carbondale branch north of Mineral of a complete modern power plant. The tipple for the mine has been erected, and the company expects to have production under way by Sept. 1. About 450 acres of No. 6 coal are on the company's property, and a production of 800 tons a day is planned.

Columbus—The Ohio clearing house to distribute approximately 6,000,000 tons of Ohio coal to the estimated 1,000,000 families in the state has been partially organized. John M. Roan has been made director in chief. He has divided the activities of the clearing house into three departments, viz.: production, transportation and distribution. The production part is to be held in charge of an operator to be named later. Transportation is to be under the charge of James Dugan, inspector for the railroad department of the Ohio Utilities Commission. The distribution is to be looked after by B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association.

Martins Ferry—It is said that fully a dozen new mines are being opened in Belmont County. Many of these are on a small scale while others are of more pretentious size. Development of the coal under the George Frazier farm along the Harrisville Pike above Maynard has been begun. Motor trucks will be employed to transport the output to cars. Many of the other developments are of a similar nature and while individual outputs will be small, the aggregate will be considerable.

Lafferty—Two new mines have been opened near Lafferty, one by the Ohio Match Co. of Wadsworth and the other by the Jordan Coal Co. The first is located between Lafferty and Bannock, and the second between Lafferty and Black Oak. The Jordan mine has already started producing coal and the other one will begin as soon as the switch which is being laid to the mine is completed. It is said that two or three additional mines will be opened.

Crooksville—A force of workmen is busily engaged in cleaning up the old Carding mine near Rose Farm, and all the machinery and equipment is to be thoroughly overhauled and repaired preparatory to placing the mine in operation at an early date. This mine is now owned by the Manhattan Coal Co. of Nelsonville, which purchased it at trustee's sale recently, the consideration being $47,000.

ILLINOIS

Peoria—The Grove & Morton Railway Co. has been incorporated to build a coal road between Grove, on the P. & P. U. R.R., between Peoria and Pekin, and Morton, through a district where the Maplewood Sales Co. has been acquiring coal rights. A shaft will be sunk at once. The incorporators are George A. Ditewig, James F. McElwee, Alfred McLinden, Cornelius Saurs and George H. Johnson, all of Peoria.

Nashville—The Nicholson Coal Co.'s mine here has been purchased by John T. Clarkson, John L. Clarkson and Samuel Day and the name has been changed to the Nashville Mining Co.

Carbondale—Evan John, State Director of Mines and Minerals, was recently asked over long distance telephone from Weaver, in Williamson County, to go there and solve a mystery which has caused the miners to quit work. Lunch buckets and tools disappeared and a trolley wire was cut. Some of the foreign miners attributed the pranks to ghostly agencies. Director John told them to organize a posse and search the mine for the "ghost."

Springfield—An examination will be held by the Illinois Public Service Commission Aug. 18 at different points in the state for the position of Mine Rescue Superintendent. The position pays $125 a month and living quarters with heat and light are provided. The superintendent has charge of the mine rescue work of the state and usually takes personal charge of such work when there is a mine disaster.

Carterville—The Carterville Coal Corporation has been incorporated by Fred W. Richart, Mike Farrell and M. D. Coup.

Morris—John Heather and others are taking steps to sink a shaft near here. Drilling is being done to determine the thickness of the coal vein. It is reported that other shafts will be sunk. Morris used to be a coal center but for several years most of the fuel for local requirements has been shipped in.

Herrin—On account of reported robberies in the entries of the W. P. Rend Coal and Coke Co.'s mine at Weaver, north of here, the mine has been idle for several days and 86 miners have quit and gone to other mines. It was reported that the mine was infested by holdup men and these reports, it seems, originated from 1 or 2 German-American miners. One of these has been placed under arrest for his activity in causing a suspension of work.

Ledford—The new mine here of the Heato Coal Co. is now in shape to produce. Its capacity for the initial output will be about 300 tons a day. This is a slope mine and will be electrically operated. The tipple is of peculiar arrangement and is 15 by 45 ft. and 25 ft. high on concrete piers.

Personals

R. C. Harris has been appointed by the Canadian Government as fuel controller for Ontario. He will act in association with C. A. Magrath, federal fuel commissioner.

William Randle, treasurer of the Eldnar Mining Co., of Belleville, Ill., was severely injured recently when he was caught under a car that turned over on its side. His injuries were in the region of the stomach and back.

E. E. Wright, for several years coal and coke agent for the Baltimore & Ohio R.R. at Cleveland, has been appointed traffic manager of the Youghiogheny & Ohio Coal Co., with office at Cleveland.

L. A. Starrett, who has been with the Westinghouse Electric and Mfg. Co. for a number of years, has resigned this position and will open an office and look after Ohio and Michigan territory for the Ironton Engine Co.

John P. Reese, vice president and general manager of the Superior Coal Co., at Gillespie, Ill., is recuperating from a severe sickness. He left Gillespie on July 22 for Excelsior Springs, Mo., where he will remain until some time in August.

George F. Schwartz, who has been sales manager for the Buckeye Coal & Ry. Co., Columbus, since the Sunday Creek receivership, has resigned to accept the position of vice president of Hatton, Brown & Co. He will be in charge of sales in the Columbus office.

G. B. Hartley of the Monongahela Valley Engineering Co. of Fairmont and Morgantown, W. Va., has accepted the position of general manger and purchasing agent for the Cambria Coal Co. of Cleveland, Ohio. This firm is opening up a large operation near Lumberport, Ohio.

Homer Greer, who has been in the coal mining and machinery business for a number of years, has accepted a position with the Ironton Engine Co., having charge of its interests in western Kentucky and Indiana. He will make headquarters for the present at the Vendome Hotel, Evansville, Ind.

John C. McCormick, recently chief clerk to W. H. Mason, commercial freight agent of the Baltimore & Ohio R.R. at Uniontown, has been advanced to the position of traveling coal agent for the Connellsville Division, succeeding Adam Erdman, who has been transferred to a similar position at Baltimore.

V. E. Sullivan, member of the house of delegates of West Virginia from Raleigh County, has been appointed a deputy mine inspector for the 11th mining district with headquarters at Beckley. He succeeds deputy inspector L. B. Holliday, transferred from the 11th to the 13th district to succeed Lawson Blinkinsopp.

Thomas Kennedy, president of the United Mine Workers of the Lehigh district and member of the Anthracite Conciliation Board, is among those drawn in the first draft for the army. Mr. Kennedy is a member of the public safety committee and the coal production committee of the National Council of Defense.

William Wolf has resigned as City Engineer of Belleville, Ill., to devote his entire time to the coal business. Wolf and John Taylor recently purchased the Reeb mine, one of the largest producers in St. Clair County, and are sinking another shaft on adjacent land which has been leased. His resignation took effect Aug. 1.

J. H. Jowett, formerly general sales manager of the Ingersoll-Rand Co., was recently elected vice president of the company, while L. D. Albin, formerly assistant general sales manager, was appointed general sales manager. Mr. Jowett and Mr. Albin will continue to make the company's New York office, at 11 Broadway, their headquarters.

Philip Maue, formerly with the Cochran firm of mining engineers at Pottsville, Penn., has been appointed superintendent of the Maryd colliery, succeeding Arthur Kennedy, who will retire from coal mining. Mr. Maue has had extensive experience with the Cochrane engineers, having had charge of the Hazleton district during the valuation of the Lehigh Valley Coal Co.'s properties.

Samuel J. Jennings, formerly state mine inspector in the Eighth Anthracite district of Pennsylvania, and recent superintendent of the Diamond colliery of the D. L. & W. Co., has resigned to become general manager of the Price-Pancoast colliery at Throop. David Girvan, of Pittston, superintendent of the No. 9 colliery of the Pennsylvania Coal Co., goes to the Lackawanna company to succeed Mr. Jennings.

J. W. McQueen, who has been trustee in charge of the bankrupt properties of the Jenifer Furnace Co., of Alabama for a number of years, has resigned and was succeeded by W. Aubrey Thomas, of Niles, Ohio. The company owns valuable ore and coal properties. It is understood that a reorganization will be effected and the properties placed in operation. The Weller colliery is located in Jefferson County and has been idle since 1913. The furnaces of the company are in Anniston.

A. T. Shurick, of the editorial staff of "Coal Age," has been commissioned a First Lieutenant in the Engineer Officers' Reserve Corps with rank dating from July 20. He has also received a commission as Captain in the Veteran Corps of Artillery of the State of New York with rank from July 16. The latter organization is to handle the anti-aircraft defences of New York City. It is probable that Mr. Shurick will be ordered to report at the next officers' training camp the latter part of this month.

Industrial News

Whitesburg, Ky.—Several wrecks on the Louisville & Nashville R.R. between Jackson and McRoberts during the recent past have delayed coal shipments to a marked extent. All traffic was delayed.

Knoxville, Tenn.—The Louisville & Nashville R.R. is now receiving 2500 new steel coal cars for use in meeting the winter transportation requirements. These cars are of the standard type with 100,000 lb. capacity.

Ottawa, Ont.—The Canadian Government has decided to appropriate $250,000 for the establishment of a plant in Saskatchewan for the manufacture of fuel briquettes from lignite coal. This, it is claimed, will largely solve the fuel problem of western Canada.

Youngstown, Ohio — The Youngstown Sheet and Tube Co. is pushing development work on its recently-purchased coal lands in Greene County, Penn., in order to begin coal shipments as soon as possible. Two shafts will be sunk by the Drake Construction Co., Pittsburgh, to which contracts have been let.

Louisville, Ky.—The Kentucky State Board of Control has filed a complaint with the Kentucky Railroad Co. against the rate of 70 cents charged by the Louisville & Nashville for transporting coal from Louisville eleven miles to Lakeland, Ky., where one of the state hospitals is located.

Birmingham, Ala.—The Interstate Commerce Commission has affirmed a former decision granting an increase in freight on Alabama coal of 10 cents per ton. This increase is to all points in southeastern territory except Mobile, and is understood to apply on bituminous coal from Kentucky, Tennessee and Illinois fields.

Springfield, Ill.—If there is a coal famine in Chicago next winter it will not be the fault of the Chicago & Alton Railroad Co., according to W. J. Davis, freight agent of the road at Springfield. Trainload after trainload is leaving here, he says, and being forwarded to Chicago with all facility, where it is being stored in great yards for next winter's use.

Youngstown, Ohio — The Youngstown Sheet and Tube Co. is to construct 102 additional by-product coke ovens, increasing the total capacity of its local by-product coke plant to 3400 tons a day, as it has 204 ovens in operation at present. The new ovens are to be of the Koppers horizontal cross regenerative type. An expenditure of about $3,000,000 is involved.

Moundsville, W. Va.—Work will be begun shortly on the reërection of the river tipple at the Fort Pitt mine of the Clifford Coal Co. located across the river from this city. The tipple extending from the mine to the river shore was washed away during the flood two years ago. This tipple is being reconstructed because of the shortage of coal cars.

Cumberland, Md.—The Montell mining property of the Maryland-Georges Creek Coal Co., placed in the hands of a receiver eight months ago, was recently sold at trustees' sale to the bondholders for $450,000, this being the only bid. The sale was made to satisfy $486,700 mortgage bonds. The property includes 3173 acres near Vale Summit, half of which is underlaid with coal.

Uniontown, Penn.—If the secured creditors of J. V. Thompson will extend the payments on their obligations for three years, it is believed a syndicate headed by Louis W. Hill of St. Paul, Minn., will purchase the Thompson property. The deal is not closed and nothing further can be done until the secured creditors have signified their willingness to extend the payments due.

Huntington, W. Va.—Coal properties continue to be extremely active in this vicinity. One of the most important recent deals is the transfer of the properties of the Sharlow Coal Co., on Big Coal River, to a syndicate composed of Thomas F. Bailey, Jr., William J. Harvie and others. The property consists of about 400 acres already under development and was sold at a price rumored to be $200,000.

Huntington, W. Va.—The Lynn Block Coal Co. recently took over 217 acres of land from B. J. Prichard, making a total of more than 400 acres now owned by this company. The mine is located near East Lynn and the coal company is asking for a railroad track to connect with the Norfolk & Western. The consideration for the Prichard tract is said to have been in the neighborhood of $30,000.

Beckley, W. Va.—F. M. Cook, owner of the City Coal Co. mines, which are located within the corporate limits of Beckley, has sold his holdings to A. H. McInture, assistant treasurer of the New River company. This is the second time these mines have changed hands within a year, Mr. Cook having purchased them from B. H. White less than 12 months ago. The price paid for the property was $35,000.

Lansford, Penn.—The Lehigh Coal and Navigation Co. has awarded a contract to the Shamokin Lumber Co. for the erection of six single and two double dwellings on the plot of ground from which a huge culm bank has been removed. These homes will be of concrete and have all modern conveniences. It is the intention of the company to build a certain number of houses annually until all its employees can be domiciled comfortably.

St. Louis, Mo.—Officials of the Baltimore & Ohio Railroad Co. report that in checking up to ascertain what progress was being made in the campaign for heavier loading of cars, it was found that practically every coal car was carrying more than its rated capacity. Burlington officials report that loading shows an increase of 15 per cent. over a year ago. The coal traffic on the Burlington is 89 per cent. in excess of last year. The Illinois Central and all the Southern roads report increased coal tonnage.

Baltimore, Md. — Negotiations were recently closed by the Davis Coal and Coke Co. for the purchase of the Lightview Coal Co., which has been in active operation in the coal fields of West Virginia. The deal will give the Davis company two mines which are now producing coal and 300 acres of land from which a good grade of locomotive fuel can be secured. This property lies near the coal land developed by the Davis company at Bellington, in what is known as the Weaver field.

Norfolk, Va.—At the closing session of the annual convention of the Retail Coal Dealers' Association of Virginia, held in Norfolk, the following officers were elected for the ensuing year: President, F. S. Sager, Norfolk, first vice president; P. T. Murphy, Richmond, second vice president Taylor Gleaves, Roanoke; secretary and treasurer, C. E. Morrisett, Norfolk, member of the executive committee, Mr. Price, Roanoke. The association selected Roanoke as the next meeting place.

St. Louis, Mo.—A bill to enforce the selling of coal by weight instead of by measure has been passed by the Board of Aldermen. In the past the poor of the city have been buying coal by the bushel, which consisted of anywhere from 50 to 75 or 80 lb. The new bill necessitates that all coal shall be sold by weight and that a bushel contain 80 lb. A heavy penalty is assessed for violation.

Jefferson City, Mo.—The Supreme Court of Missouri has ordered an inquiry into the Southwestern Interstate Coal Operators' Association, which has headquarters at Kansas City. Major J. Lilly of Moberly has been appointed special commissioner and examiner in the matter. He has ordered that the books of the association be produced before him at the Hotel Baltimore, Kansas City. The officers of the association have expressed their willingness to undergo any investigation.

Jersey City, N. J.—The Davis-Bournonville Welding Institute opened in Jersey City on Aug. 1. This institute is under the direction of the Davis-Bournonville Co., manufacturers of oxyacetylene welding and cutting apparatus. It has been the policy of this company from the beginning of its business ten years ago to provide instruction to all purchasers of equipment, but it always had in mind the ultimate need for a welding school, providing more extended instruction and research than could heretofore be given.

Trinidad, Colo.—Earl Cobb, president of the Southwestern Coal Co. of Amarilla, Tex., and Bert Lloyd, until recently superintendent of the Sugarite mines belonging to the Rocky Mountain, St. Louis & Pacific Co., located in northern New Mexico, have leased the Prospect mine near Trinidad, Colorado, and expect to shortly increase the production considerably. They are in the market for the necessary equipment to accomplish this increase, and will be pleased to receive catalogs and literature covering such equipment.

St. Louis, Mo.—As a result of the foreclosure by the United Mine Workers of Illinois of a mortgage on the Vogel building at Missouri and Collinsville avenues, East St. Louis, it is probable that the state headquarters of the organization will be moved from Springfield to East St. Louis. The building was bought in at chancery sale for $116,000 to cover the organization's mortgage for $100,000, and a second mortgage of $10,000, and accrued interest. Title was transferred to Frank Farrington, Walter O. Nesbit and Harry Fiswick, trustees. The organization will probably find it advantageous to occupy part of the building and stop paying rent at Springfield.

Toronto, Ont.—The City of Toronto has asked the Ontario Railway and Municipal Board for permision to establish a municipal fuel yard at a cost of $250,000. A similar application has been made by the City of Ottawa, which proposes to spend $160,000 on a similar project. The board on July 27 gave a hearing to the Ottawa case, the application being strongly opposed by 90 per cent. of the coal dealers of the city, who presented a petition showing that they had over $600,000 invested in buildings and plants, and claiming that coal was sold cheaper in Ottawa than in any other Canadian city and that they were prepared to take care of the needs of the city during the coming winter. The board reserved its decision.

St. Louis, Mo.—The first shipment of coal by barge up the Mississippi River to Minneapolis will leave East St. Louis in a few days. The first shipment will be about 1000 tons of Franklin County bituminous. It will be loaded from the cars by means of a tipple that is being installed and will be consigned to the Flour City Fuel Transfer Co. at Minneapolis. It will be unloaded with a crane loaned by the city authorities of Minneapolis. Later a new crane is to be installed with a "clam shell" bucket that will lift two tons of coal at a grab. The first shipment will be handled over the East St. Louis Terminal. Later shipments will be handled over the Alton River Terminal.

New York, N. Y.—The Special Committee on the Coal Situation of the Merchants' Association of New York City has reported that it feels reasonably confident that the public need not be unduly apprehensive as to a lack of coal supply or exorbitant prices. The committee says it has considered all phases of the existing conditions with respect to the production and distribution, as well as the legislation now pending in Congress and finds that in view of the probability of satisfactory agreements for the protection of the public being reached, any legislation fixing prices and controlling the distribution of coal is at this time unnecessary and urges that the Federal authorities continue to coöperate with the coal operators with a view to consummating an agreement that will secure a proper supply of coal and its equitable distribution at fair prices to consumers; and that in the event of the failure of such efforts the Federal government be urged to establish just prices and arrange for the equitable distribution of coal.

Market Department

GENERAL REVIEW

Anthracite shipments show a gratifying increase. Uncertainties continue to dominate the bituminous trade. Record-breaking shipments of Lake coal. Eastern coals dropping out of the Middle Western markets.

Anthracite—The first of the month brought with it the customary advance of 10c. per ton on the domestic sizes of the large companies, and with the beginning of next month the full winter circular will be in effect: individual prices, being already at the full maximum allowed by the Federal Trade Commission, remain unchanged. The movement is still confined largely to the more remote points, though improvement is noticed in shipments to districts contiguous to the mining regions. This gives the buyers in these latter districts hopes that there may be more foundation in the promises they have been receiving that large shipments would soon be diverted their way. The urgency of the situation is evident from the request of the railroads that the operators load box cars and the eagerness with which buyers accept consignments in this class of equipment, even with the additional labor cost which it involves. Supplies are undoubtedly increasing and a good many dealers are getting their consumers well stocked.

Bituminous—Many uncertainties continue to dominate the bituminous situation, but the outstanding fact is that very little coal is moving at the Government maximum; what spot business is being done is very close to this figure, but practically all the shippers have contracts which will absorb their entire production without much difficulty, while those without contracts have other outlets for their product where the price restrictions do not apply, as for instance in the Canadian trade, and on bunker business. A feature of the price regulation plan that obviously needs correction is the fixing of a price differential according to quality; although under stress of the heavy pressure for coal, a great many consumers are willing to waive the question of quality entirely, others having special equipment for burning a certain grade are experiencing a big loss in efficiency. The "pooling" plan has not been in operation for sufficient time to formulate much of an opinion as to the result.

Lake Markets—The prospect of a further reduction in the price of coal by the Government continues to act as a restraining influence on the market, and this has been further accentuated by the customary season dullness in manufacturing lines at this time. The announcement that the State of Ohio would take steps to accumulate 6,000,000 tons of coal for local domestic users immediately relieved the anxiety as to supplies in that quarter and buying practically ceased entirely. Lake shipping is substantially the best feature of the market, almost record-breaking tonnages moving in this trade. The heavy shipment of coal into Canada, due to the higher prices prevailing there, has almost swamped that market and it is reported that large numbers of cars are accumulating on demurrage.

Middle West—The continued uncertainty as to what action the Government will take in regulating prices is still the dominant note in the trade. Consumers are naturally hesitating to buy with the possibility of lower prices being put in effect, and in the meantime the scarcity of both cars and labor is becoming constantly more accentuated, and the outlook for the fall supplies is grave. What litle coal is selling in the spot market is generally at the Government's maximum, though the demand is so urgent that producing interests could easily obtain substantial premiums. The Middle Western mines will also be facing the problem of making up a very substantial deficiency in requirements at the upper Lake ports, which is making the situation even more serious. A great many consuming interests are making arrangements to supplant Eastern coal with the Middle Western product.

A Year Ago—Hot weather has decreased the demand somewhat, but prices remain firm.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week for the past four months:

Boston	Year Ago	Aug. 4	July 28
Clearfields	$1.10@1.60	$4.15@4.50	$3.64@4.50
Cambrias and Somersets	1.35@1.75	4.40@4.75	3.64@4.75
Pocah. and New River[1]	2.90@3.00	5.14@6.25	5.14@6.60
Philadelphia			
Georges Creek (Big Vein)	1.90@2.00	3.25@3.75	3.25@3.75
W. Va. Freeport	1.25@1.30	3.25@3.75	3.25@3.75
Fairmont Gas mine-run	†1.45@1.55	3.25@3.75	3.25@3.75
Pittsburgh (steam coal)[2]			
Mine-run	†1.35@1.45	3.00@3.25	3.00@3.25
¾-in.	†1.45@1.55	3.50@3.75	3.50@3.75
Slack	† .95@1.00	3.00@3.25	3.00@3.25
Chicago (Williamson and Franklin Co.)[2]			
Lump	1.55@1.65	3.45@3.55	3.45@3.55
Mine-run	1.20@1.30	2.70@2.80	2.70@2.80
Screenings	.95@1.00	2.70@2.80	2.70@2.80
Gross average[3]	†$1.45@1.60	$3.48@3.84	$3.39@3.88

Gross Averages[3]	1917	1916
Apr. 7	4.07@4.36	1.44@1.60
Apr. 14	4.01@4.35	1.45@1.61
Apr. 21	3.83@4.14	1.46@1.62
Apr. 28	3.81@4.12	1.45@1.62
May 5	4.04@4.40	1.45@1.59
May 12	4.64@4.98	1.44@1.59
May 19	5.08@5.54	1.42@1.56
May 26	5.10@5.58	1.41@1.55
June 2	5.00@5.46	1.47@1.63
June 9	4.80@5.24	1.52@1.72
June 16	4.77@5.23	1.50@1.66
June 23	4.81@5.15	1.51@1.67
June 30	4.79@5.15	1.46@1.64
July 7	3.88@4.35	1.41@1.57
July 14	3.95@4.12	1.41@1.57
July 21	3.96@4.13	1.41@1.57
July 28	3.39@3.88	1.43@1.58
Aug. 4	3.48@3.84	1.45@1.60

[1] F. o. b. Norfolk and Newport News. [2] Per net ton. [3] The highest average price made last year was $4.80@5.33 made on Nov. 25. *Price lower than the week before. †Price higher than previous week.

COAL PRODUCTION

The following is the weekly report on the production of bituminous coal and the causes of loss of working time. A slight increase in the percentage of full-time capacity realized in actual output is reported for the week ended July 14. Bituminous mines in seven states produced 77.4 per cent. of their full-time capacity with the labor force at present available. The figure for the preceding week, 76.5 per cent., was itself higher than any reported since June 1, when the statistics of weekly production were first collected.

Per cent. of full-time output in week ending:

State	June 23	June 30	July 7	July 14
Indiana	68.3	69.5	73.0	73.0
Illinois	65.9	72.7	78.2	79.2
Ohio	70.5	65.5	76.3	71.9
Pennsylvania	75.5	72.3	75.4	78.6
Eastern Ky. and Tenn.	63.2	72.8	75.0	78.4
United States*	72.9	71.4	76.5	77.4

*Embraces twelve associations with a combined production of about one-fourth of the production of the country.

Per cent. of full-time output lost on account of:

Week Ended	Car Shortage	Labor	Mine Delays	Miscl.
June 23	20.4	3.2	2.7	0.9
June 30	21.0	4.5	3.2	1.4
July 7	12.2	6.5	4.2	1.8
July 14	15.9	3.4	3.9	0.9

Week Ended	Full Capacity	Actual Production	% of full-time output Produced	Lost
June 23	2,059,327	1,495,272	72.5	27.5
June 30	2,175,287	1,516,267	69.7	30.3
July 7*	1,780,024	1,335,861	75.0	25.0
July 14	2,215,836	1,680,204	7.8	24.2

* Five day week.

BUSINESS OPINIONS

Iron Age—Active buying of iron and steel products by the Government, in some cases with prices stipulated, but for the most part at prices to be fixed later, is in contrast with the continued abstention of private buyers from the market. There is little dissent from the view that present conditions are likely to last for some time and that if meantime some of the price peaks come off the steel trade will not suffer.

Dun—The slowing down of business, customary with the approach of midsummer, is accentuated by the uncertainties engendered by international conditions, and less strength appears in prices. Reaction from the extreme levels has occurred, not only in seasonable foodstuffs but also in other commodities in which there had seemed no end to the advances, such as in pig iron, and belief that the crest of some of the leading markets has at last been passed is spreading. Commercial failures this week are 271, against 266 last week, 286 the preceding week and 284 the corresponding week last year.

Bradstreet—Trade conditions present midsummer characteristics, coupled with a certain quantity of conservatism over the eventual shape Government price fixing will take, but the total volume of business, expressed in physical as well as monetary terms, is certainly above the normal seasonal average, and on the whole favorable reports outnumber those of a contrary tenor. Agreement is general that fall trade will assume large proportions, and underneath the waiting attitude that is temporarily displayed while legislators are debating the subject of price control, is a strong tendency to make preparations for a prosperous autumn.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week is running in advance of the corresponding period of 1916. The volume of road sales for immediate delivery is about even with the same week last year, but is considerably in excess of a year ago for future delivery. Customers have been in the market in smaller numbers. Collections are normal. Prices on domestic cotton goods are firm.

Dry Goods Economist—The two items of chief interest this week in dry goods circles are: first, the controversy over discounts between manufacturers and buyers of women's ready-to-wear garments, and, second, the passage of a bill which has been signed by President Wilson calling for an expenditure of $640,000,000 for the manufacture, maintenance and operation of an airplane service in the war on a scale far beyond anything yet attempted.

Current Events

Fuel Shortage Items—The New York City Merchants' Association on July 28 drew up resolutions in which they stated their opinion that in view of the action the Government was taking to increase fuel supplies and control prices, that there was no necessity for alarm over the outlook.

The clearing house for handling the six million tons of coal, Ohio operators have agreed to furnish domestic consumers in that state has been organized, and an endeavor will be made to get it in operation very soon in the current month.

Ocean Shippings—On July 29 the New York City Merchants' Association sent a resolution to President Wilson, requesting that the Government issue some exact statistics as to the amount of vessel tonnage destroyed by submarines and on other points concerning the shipping situation.

Federal Trade Commission—The Commission issued a statement toward the close of last week to the effect that the work of determining the cost of production of coal

was progressing very satisfactorily, and that it would soon have its report ready to submit to President Wilson.

Foreign Market—Press reports under date of July 29 state that negotiations are being conducted between Germany and Switzerland, by which the latter country hopes to be able to arrange for an adequate coal supply from the former. On account of the great vessel shortage, Switzerland is almost entirely dependent upon Germany for its fuel supplies, and the latter country is taking advantage of the situation to force a very substantial loan from Switzerland. President Schulthess, in discussing the matter, stated that Germany was already suffering for coal, due to the unusual consumption in war industries, and that she was worse off to day than last winter He also stated further that it was out of the question for Germany to adequately supply Switzerland, and that even under the best conditions the price would be in excess of the old rate of $12 per ton.

Legal—The Missouri State Supreme Court on July 23 ordered an inquiry into the affairs of the Southwestern Interstate Coal Operators' Association on the charge that the association has violated the anti-trust laws of the state by conspiring to restrain trade. The defendant companies were ordered to appear before a special commissioner at Jefferson City on July 31 for an examination.

Labor—The Kentucky strike seems to be making very little progress, no important mines having been closed so far.

Atlantic Seaboard

BOSTON

Hampton Roads situation rather mixed. Receipts irregular and spot prices uneven. "Pooling" not yet accepted by several large shippers. Pennsylvania grades moving on contract and for export. Few spots sales except at premium. Anthracite receipts light. Public fuel committees revise their forecast.

Bituminous—Pocahontas and New River receipts at the piers are irregular, but for the most part dispatch is good. Government requisitions have been less upsetting than was feared, and except for a mildly increased demand for export and some uncertainty over the "pooling" plan there are few developments. The Western and line trade is growing erratic, due to competition from other fields, but notwithstanding the uneven flow of coal to Tidewater, practically all the agencies have orders enough and bottoms in hand so there is no interference with prompt dumping. Most of the coastwise coal is being sent forward on season contracts and little is heard now of spot sales.

On this point there is still an apparent lack of coördination. A few shippers who were represented at the Washington conference are adhering closely to $5.14 f.o.b. Hampton Roads ($3 net ton at the mines), but actual sales on that basis are few. Other agencies who a few days ago were asking $6.10@6.25 are now making an effort to sell on the coal committee's basis but with indifferent success. The great majority are making deliveries on the $4.85 season basis and are confining themselves strictly to that program. For a long time to come these shippers, if they fill their contracts, will have their hands full without dipping into the spot market.

The higher "authorized" price of $3.50 net ton f.o.b. mines for screened coal also has its influence on the situation. So long as the Western demand holds up for lump, egg and nut from Pocahontas and New River, the more inclined the operators will be to favor railing coal West as against Tidewater. There are possibilities in this situation and one is led to inquire whether there will not be some revision of this differential, which seems large.

Meanwhile, the actual state of things in New England shows little improvement. Of course a very large volume of business that ordinarily was coastwise has been placed all-rail, but there is a limit to what the railroads can do in this territory. Just now with conditions favorable in most respects the balance seems in favor of good stocks and liberal shipments. It is realized, however, that a very little impetus would completely change the aspect. Two to three months supply looks large in early August, but it is another story in October. There is some quiet buying, both f.o.b. and alongside, but mostly in small and scattering lots; $8.75 continues about the market for 1500- to 2000-ton cargoes in Boston Harbor, and $9@9.50 is the range on small lots for delivery inland. Most sales on this basis are of an emergency character, because the movement from Pennsylvania all-rail is now free enough to permit staple buying from that quarter at levels that figure materially less in price.

Several large Pocahontas and New River agencies have not joined in the "pooling" arrangement, and apparently have no present intention of doing so. Most of these interests have Government contracts on a penalty basis and are unwilling at present to subject themselves to heavy allowances because of inferior preparation at mines over which they have no control. It is an interesting situation and will be watched very closely the next fortnight.

No reliable report is heard in this market with regard to Pennsylvania or Maryland coal on the $3.64 basis. Buyers have about reached the conclusion there is "nothing in it" and are just beginning to make new purchases on a premium basis. Most operators have all the contract business they need at prices considerably in excess of $3.64, and those who haven't are citing the demand for export, for bunker purposes and Canada, all of which is more than sufficient to absorb what surplus is today being mined. Some shippers state the case very baldly: "Pay us $4.15@4.50 or the coal goes to Canada." Long experience has taught the more far-sighted New England buyers that coal that can and will be shipped promptly is worth a lot more than coal that may not be mined until December and then will come forward only in case the price paid is up to or above the then current market. The volume for this territory continues heavy all-rail. Except for railroads there is not much Pennsylvania bituminous coming by water.

One New England railroad, fearing congestion at all-rail transfer points, is dumping into boats at New York piers, freighting to ports like New Haven, and reloading there for points East. This is one sidelight on a complicated project. When the turn comes it will probably be sharp and sudden.

There is less discrimination already as to quality. The time is almost in sight when anything will do. In the present state of the labor market operators are not in good position to haggle much over preparation.

Bituminous at wholesale, f.o.b. loading ports at points designated, is quoted about as follows:

	Clearfields	Camb. and Somersets
Philadelphia	$5 50@5.80	$5.75@6.00
New York	5.90@6.15	6.10@6.40
F. o. b. mines	4.15@4.50	4.40@4.75
Alongside Boston (water coal)	8.10@8.50	8.25@8.75

Pocahontas and New River are quoted from $5.14@6.25 f.o.b. Norfolk and Newport News, Va., for spot coal, and $9@9.50 on cars Boston or Providence for inland delivery.

Anthracite—July showed generally less receipts than June. Full trainloads all-rail have apparently been given up for the present, the plan having made too heavy a draft on coal that would ordinarily be sent in other directions. A marked decrease in receipts for Tidewater dumping was observable after the effort had been made to rail extra tonnages to New England. That being the case it is hard to see wherein was the advantage of the much-heralded device to keep this territory warm the coming winter. Had those operators who do little or nothing for this market been induced to send consignments here it might have been a gain, but practically the only companies who responded were the same companies who are straining every nerve to deliver New England's quota by water. In other words, the New England coal committee succeeded only in inducing all-rail shipments from mines which were already trying to do their quota for the same territory through water shipments which are rather less in cost to the distributor.

The sharps who have been before the public this season as general advisers on the coal situation have at last acknowledged that even they cannot make good the shortage that exists. Notwithstanding their earlier plea to postpone buying because all would come out well in the end, were the consumer only to wait, they have issued a statement urging folks to fill their bins now without a moment's delay. "A fixed Government price at which coal cannot be secured will not run a factory or keep a house warm next winter," is one of the pearls that lately fell from their lips. As a result the retailers are once more besieged with orders and have entered upon a long season of anxiety over slow shipments.

Dealers here who have been customers of the Susquehanna Coal Co. are especially anxious over the recent sale of that company's properties to a factor interested primarily in movement Westward.

BALTIMORE

Price situation uncertain and middlemen in a quandry. Not all smooth sailing on coal pooling. Supplies of both bituminous and anthracite light.

Bituminous—The price situation is uncertain again, despite the fact that technically the majority of coal handlers here are striving their best to live up to the maximum prices fixed by the Government. There can be no doubt but that some producers, especially of the better grade steam coals, are openly demanding better than the $3 or $3.25 maximum. Jobbers have asked officials in Washington what they are to do when the operators are offering spot coal above the $3 figure, and when consumers generally, with a full understanding of the situation, are willing to pay as high as $4 and $4.50 for good coal. These middlemen say that it is impossible to get any quantity of the $3 coal through here, and that in addition nothing like full deliveries are being made even on high-priced contract coal, so that consumers are more and more forced into the open market Unless Washington reaches some adjustment on the price situation that will hold all producers alike, and furnish more protection for jobbers, the middleman will have a hard road to travel.

Supplies at tide here are generally light, and quality is not well maintained on much of the coal. With general pooling of tidewater coal the incentive of individual clean mining to maintain a reputation is largely eliminated. Then there are numerous complaints that changing coal under the plan of giving a consumer any coal from any mine that comes to any one of the ten grade tracks here, has hurt steaming properties, caused clinkering, etc. There seems little complaint on larger shipments coastwise, but there is undoubtedly much confusion and dissatisfaction as to local harbor business in smaller lots.

Anthracite—Hard coal men are growing more and more uneasy now that they have entered the month of August with such a large part of their orders undelivered or in sight Premiums are being paid on the more urgently needed coal. From present prospects the coming fall will see a genuine scramble for fuel unless Governmental agencies cause a change in the situation.

NEW YORK

Demand for anthracite slower but supplies remain short. Canada calls for heavy shipments. Developments in the bituminous situation carefully watched. Commercial coal scarce. Bunker business good.

Anthracite—The slowing up in buying has had no appreciable effect on stocks. Dealers say there has been a decided easing up in the urgency for coal, but the demand continues heavy enough to take up all of the independent product coming to this market. The slowing up is attributed to the better supply among the big producers and their ability to give their regular customers more coal.

The pressure on the operators continues heavy and it is not believed they can produce sufficient coal within the next few months to prevent a serious shortage this winter. Local wholesale dealers predict that the demand from Canada is going to continue far into the winter and that shipments will be heavy unless the export embargo is made to apply to that country.

Local dealers who have storage space are trying to accumulate next winter's supply, but they cannot get the coal, though several of the yards in Brooklyn which have been practically bare of coal since early last spring are beginning to display small stocks. A search for middlemen with sufficient of the domestic coals to make up a good-sized cargo resulted amost negatively. Very few dealers have any of these sizes to offer.

The easiest size at present is chestnut, but it is far from being a drug on the market. There is less stove on hand, while egg is second on the list. Pea coal is scarce, but no buyer has to go begging.

The setam coals continue most prominently in the market. Buckwheat is not as free as either rice or barley. Good grades are in demand and are sold at the best prices.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual*
Broken	$5.60@5.75	
Egg	5.60@5.75	
Stove	5.85@6.00	
Chestnut	5.90@6.05	
Pea	4.40@4.95	$5.75@6.25
Buck	4.00@4.15	4.75@5.00
Rice	3.40@3.60	3.25@3.75
Barley	2.90@3.10	2.90@3.10

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Demand is strong but there is little coal here to meet it and orders are being taken subject to delay in shipment and also subject to price changes. Reports from Washington that there might be a

still lower price fixed for bituminous coals was one of the principal items of discussion.

Nearly all of the middlemen are grumbling about the scarcity. They say, however, that their contracts are being looked after, some of the consumers getting 100 per cent. of their requirements. Consumers with contracts calling for weekly shipments and for which they are paying more than the $3 net ton rate at the mines are again becoming uneasy and frequently ask the dealer with whom they do business why it is they have to pay more than $3 at the mines. When asked why he does not cancel his contract and take his chances with the free buyers the consumer quickly stops talking and goes home well satisfied with his contract.

With the miners showing a disposition to work steadier, the car suply is very bad, some operators running far below 50 per cent. Production shows no increase and operators have a hard time looking after their obligations.

Coal is scarce here, with demand for commercial grades steady and prompt prices strictly on the Government basis. Bunker supplies are plentiful and prices are strong. There have been many boats anchored here waiting for coal, among them several Norwegian vessels. Loaded boats are in demand and bring about $1 more than coal at the docks.

The pooling arrangement which is now practically in use on nearly all the loading docks is so new that at this time it cannot be said how successful it is.

Current quotations per gross ton, f.o.b. Tidewater, on the various grades are about as follows:

	F.o.b. Mine Price
Bunker coal	$6.25@6.50
Commercial	5.25@6.25(x) $3.00 (net)

(x) Based on Federal Trade Commission suggestion.

PHILADELPHIA

Anthracite retailers still short, but demand eases slightly. Promises that situation will be relieved this month. No improvement in car supply. All sizes in strong demand, except nut. Circulars advanced the usual 10c. Bituminous in heavy demand, with supplies scarce. Fixed prices maintained. Car supply fair. Consumers anxious to stock. Tide pool starts.

Anthracite—Shipments of the past week, especially from one large company, have been more satisfactory, and it is just as likely that the oppressive heat has made the dealers less ambitious. At any rate there has been less pressure on the shipping interests for supplies. While some dealers have reported fair shipments, there are others who claim that the past week was the worst of the summer.

The railroads continue to request the operators to load box cars wherever practicable and the willingness to unload them has aided many dealers to procure coal. The mere fact that they are glad to get the coal in such equipment is evidence of their need of fuel at this time of the year. The work of loading the cars has caused dissension at some of the collieries and the men quit at one colliery rather than do this.

The bulk of the entire production is still going to New England points and the Northwest. Contrary to the usual procedure the heaviest shipments to New England are still all-rail, and the tide shipments also continue in good volume while the movement to Lake ports also continues very heavy. This of course acts against this market and no authoritative information seems to be forthcoming as to when this vicinity will be favored. For the past two months the dealers have been fed up on the promise that the shipments would come any week and now the rumor is that August is the time set for relief. The report at this time seems to have more truth than usual and there is a feeling that by the middle of this month the situation here will be considerably improved.

While the dealers will not admit it, there are actually a number who do not need as much coal as they pretend; their summer orders have been almost completed, but as they are anxious to stock some coal they refuse to admit it. Some of them, too, seem to be getting some fair stocks, particularly of egg coal, as almost every one is now getting a little more of this size than they are actually sending out. Most of the larger dealers have practically no stocks, however, and with thousands of tons on orders to be delivered. They are the ones who usually wait for company coal and refuse to pay the advanced prices of the individuals as allowed by the trade commission.

There are some who believe that if two or three of the big companies should suddenly divert their tonnage this way for several weeks it would cause the market to be flooded and actually produce some dull times before cold weather. It is also pointed out that if the car situation became so complicated that business to distant points would have to be neglected, this would mean a flood of coal here and undoubtedly weaken the market. This seems to explain the action of the companies in making such heavy shipments to outside markets at a time when they can best procure the cars.

The car supply on the Pennsylvania R.R. continues poor and the Reading Ry. still refuses to allow their cars to go off their lines in the city. The Lehigh Valley continues to allow a limited number of cars to go to points on the Pennsylvania, which has very materially relieved a serious situation with the dealers located on that line in this city.

Egg coal is in such demand to New England points that local dealers, especially those in the suburbs, despair of filling before fall the heavy orders booked since early spring. The stove coal demand becomes more insistent as the summer advances. No retailer seems to have completed his orders for this size and the cry for it is so general that shippers are compelled to ignore them. Chestnut is growing weaker and operators report having received a number of cancellations on that grade this week.

Pea is as scarce as ever and at the Pennsylvania Retail Coal Men's convention this week there was a strong protest from dealers against the price of the "poor man's" coal as they choose to call it. They feel that the Federal Trade Commission erred in granting the individual operators so much latitude in pricing their sales for this size.

This district seems entirely willing to pay $3.50 for buckwheat, but it is bringing from $3.60 to $3.85 at points in New Jersey on the Central R.R. Rice does not gain in strength and we have heard of sales as low as $2.15. Barley is actually weak and we believe it can be bought slightly above a dollar. The big companies continue to place a fair tonnage of the smaller steam sizes in the storage yards.

The big companies promptly issued their August circulars showing the usual advance of 10c. a ton over the July prices and with the beginning of September the last increase of 10c. will become effective and the full winter circular will then rule. As has been their custom for the past several months the individuals were somewhat slow in issuing their prices, but the indication is that they will only make the advance of 10c., except those companies who have taken advantage of the Federal Trade Commission's suggestion and have been selling their product at the maximum price and would naturally not add anything to it.

At the annual meeting of the Pennsylvania Retail Coal Merchant's Association here ex-Gov. Fort, of New Jersey, a member of the Federal Trade Commission, warned the dealers that they must be fair in pricing their coal, for the reason that the commission would soon have conferred upon it the power to fix the price of coal. He stated that it was his opinion that a net profit of $1 per ton was ample under present conditions. At this rate many of the dealers would welcome Government control of their business, and the president of one of the largest retail companies came out in the papers with the statement that they would be entirely satisfied with a net profit of half that amount, which would enable them to pay more than ordinary dividends on their stock.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$5.10	$6.25	Buck	$2.90	$3.80
Egg	4.35	5.45	Rice	2.40	3.40
Stove	4.60	5.80	Boiler	2.20	3.30
Nut	4.70	5.75	Barley	1.90	2.15
Pea	3.30	4.20			

Bituminous—There continues to be an extremely heavy demand for coal, with supplies very scarce. Practically all shipments are being applied on contracts. Spot coal has almost entirely disappeared from the market, although a few cars are occasionally to be had at the price of $3.25 per net ton or $3.36 per gross ton.

Shippers continue to look forward to some readjustment whereby the proper difference in price will be shown between the various grades. With the inauguration of the pooling plan for tide shipments over the piers the coals for that purpose have been classified according to grade, and it would not be at all surprising if the same plan were to be followed out with line shipments.

The car supply continues between 50% and 60%, with some operations reporting even less favorable conditions. While it was not felt that immediate relief would be had in this direction, yet it is thought that the time has arrived for at least a slight turn for the better, since the railroads have made effective the numerous retrenchments in passenger service.

The inquiries from consumers continue to be very heavy and it would seem that every one is anxious to get as much coal as possible in stock at the prevailing prices, even though many of them insist that the present figures are too high. This may possibly be habit with the buyer, for with the greatly increased wage scales and increases in all materials the operators are far from making excessive profits, especially when it is considered that they are unable to operate their plants anywhere near capacity on account of railway conditions.

There are no general labor troubles at the mines at this time, although small strikes are reported here and there from several operations. On the whole the labor question, while troublesome, is probably the least of the operators' troubles at this time. Even the matter of price is almost overshadowed by the need of cars and prompt movement after loading.

The starting of the pooling system at the piers is still too recent yet to form an opinion as to its reception by the various interests. As was to be expected the grading of the different fuels was bound to meet with criticism and it is quite likely that during the course of operation it may be necessary to make adjustments of some kind.

HAMPTON ROADS

Interest centers in Tidewater Pool. No prices quoted for coastwise business. Export and bunker prices firm. Anthracite stocks very low.

The principal topic of conversation with coal men is the Tidewater coal pool, which was scheduled to go into effect Aug. 1. The more important factors in the trade are said to have declined to entertain the proposition, notwithstanding pressure brought by the railways. Just what will develop after the first of the month is awaited with considerable interest by all concerned.

There does not seem to be any desire to quote on coastwise business at present Export prices are firm at about $7 per gross ton for the best grades. Bunker coal is quoted around $7.50 per gross ton, plus 15c. per ton trimming. Poor dumping at Sewalls Point for several days resulted in short car supply at the mines the beginning of this week.

There are indications that the new demurrage tariffs and increased trimming charges will be fought before the Interstate Commerce Commission. The changes are indefensible and shippers should vigorously oppose their adoption. Several barges, which have been in the coastwise coal trade for years, are now engaged in carrying ties, etc., from Gulf ports to Eastern ports. This is no doubt due to the present comparatively low rates for coal.

Retailers report very light stocks and great difficulty in securing anthracite. Domestic demand is down almost to nothing. With the temperature at 100 very little coal is used by domestic consumers. The excessive heat also has its effect at the piers in the loading of vessels.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	July 7	July 14	July 21	July 28
Nor. & West	99,789	117,442	141,310	144,743
Ches. & Ohio	89,239	81,769	90,993	104,865
Virginian	82,943	82,769	96,385	84,236
Total	271,971	281,980	328,688	333,844

Ocean Shipping

COASTWISE FREIGHTS

Current rates are unchanged; $2.50 continues the market for barges from Hampton Roads. Long Island Sound freights continue to range from $1.35@1.50, boats being in rather better supply than coal. Towing rates are now so high that barge owners are not in position to shade current freights to the extent possible in other years.

OCEAN FREIGHTS

During the past week we have chartered a number of steamers for coals to South America and the West Indies, but none of these fixtures have been made public. We understand the "Peter H. Crowell" was charterd for Rio at or about $33 per ton net. Freight conditions have altered but slightly since our last report, and we have still a number of available steamers suitable for South America and West India business.

We would quote freight rates on coal by steamer as follows:

Europe	July 23	July 30
Marseilles	$100.00 about	$100.00 about
Spain (Atlantic)*	42.00 about	42.00 about
Spain(Med't'n)*.	44.40 about	44.40 about
South America		
Montevideo	$33.60@36.00	$33.60@36.00
Buenos Aires	33.60@36.00	33.60@36.00
Rosario	36.00@38.40	36.00@38.40
Rio Janeiro	[3]32.00 about	[3]32.50 about
Santos	[3]34.00 about	[3]36.00 about
Chile(good port)	16 50@17.50	15.50@17 50
West Indies		
Havana	5.00@5 25	5.25 about
Cardenas, Sagua	6.75 about	6 75 about
Cienfuegos	7 00@7 25	7.25 about
Port au Spain	10.50 about	10.25@10 50
St. Lucia	10.50 about	10.25@10 50
St. Thomas	8 50@9.00	8.50@ 9.00
Barbados	10.50 about	10 25@10.50
Kingston	7.00@7 25	7.50 about
Curacao[1]	8 75@9.25	8.75@ 9.25
Santiago	7.25 about	7.25 about
Guantanamo	7 25 about	7.25 about
Bermuda	6.00@6 50	6.00@6.50
Mexico		
Vera Cruz	9.00@10 00	9.00@10.00
Tampico	9.00@10 00	9 00@10.00

* Spanish dues for account of cargo. [1] And p.c.
[2] Or other good Spanish port. [3] Net.
W. W Battie & Co.'s Coal Trade Freight Report.

Lake Markets

PITTSBURGH

Poorer car supply. Little coal moving in open market.

Cars have been in rather poorer supply, both for Lake shipment and for line trade. This, however, does not altogether explain the further decrease in the amount of coal available in the spot market. The common explanation is that operators are furnishing full quotas on contracts, leaving little for the spot market, but seeing that it was generally held, prior to the operators' agreement at $3, that there had not been much coal sold on contract the explanation is not altogether adequate. In some quarters the suspicion appears to be strongly held that the price agreement is not being lived up to, that sales are being made at above the agreed price. This is conjecture, however, as nothing in the way of actual evidence is available. As to the brokers, they consider the situation altogether unsatisfactory. They insist that if there were coal available at the agreed price they would be able to secure it, and their actual experience is that of having many inquiries from consumers, willing to pay the 25c. brokerage allowed, but of being unable to find much coal against their inquiry.

Operators point out that to comply with the request just made by the coal committee of the Advisory Commission, that 50 per cent. of the coal be shipped in the Lake trade, would deprive many manufacturing plants of a full supply of coal, some of them being at work on Government orders. Lake shipments have on the whole been fairly heavy, although restricted somewhat by car shortage, supplies of cars for taking ore and of loaded coal being less than the vessels could take care of.

The only market prices that can be quoted are the agreed prices, $3@3.25 for slack and mine-run and $3.50@3.75 for screened coal, per net ton at mine, Pittsburgh district, but the turnover in the open market at these prices is very light compared with what was done prior to the price agreement.

BUFFALO

Bituminous not so active, and price lower. Prospect of soon adopting the Government prices. Anthracite going up the Lakes rapidly.

Bituminous—The conviction grows that the Government prices of $3 for slack and $3.50 for sizes will soon be the highest on the market; in fact jobbers are even predicting that the prices will soon go below those figures. Some operators are bravely announcing that they are selling their coal at the market price and a few jobbers are trying to follow them, but even they maintain that they are asking only their regulation 25c. margin. There is now more nearly enough coal on contract to supply the needs of consumers than was supposed when the contracts were made in the spring.

The effort to rush coal into Canada, where the price restriction does not obtain has already had its inevitable effect. Canadian centers are so full of unsold cars that many shippers will lose heavily from demurrage. It was reported last week that in two or three leading Canadian towns there were several thousand cars of unsold coal. Reports from Montreal state that more sellers of coal were visiting consumers there than ever before in the history of the trade.

While the bulk of the coal is now selling at regulation prices and some of it below them it would not be proper to quote it as at all exact or uniform, so the double quotation still seems proper as follows:

Youghiogheny Gas	$4 90@5.40
Pittsburgh Steam	4 65@5.15
Ohio No. 8	4.55@5.05
Bessemer	4.50@5.00
Allegheny Valley	4.40@4 90
Cambria Co. Smithing	4.80@5 30
Pennsylvania Smokeless	4 70@5.20
All Slack	4.30@4.80
Cannel	6.10@6.60

All sales are pet net ton, f.o.b. Buffalo.

Anthracite — The city distributors say that they are getting less coal than they were, the inference being that the supply has been cut into of late by liberal shipments by Lake. The local demand is much the same and promises to continue so till the ideas about future shortage change.

Anthracite shipments by Lake are large; the weekly custom-house report totals 124,600 net tons, of which 7000 tons cleared for Chicago, 37,100 tons for Milwaukee, 13,500 tons for Sheboygan, 3400 tons for Racine, 6600 tons for Manitowoc, 700 tons for Alpena, 38,000 tons for Duluth and Superior, 10,600 tons for Fort William and 7700 tons for Port Arthur.

Lake rates are $1.25 to Racine, 75c. to Manitowoc, 65c. to Sheboygan, 60c. to Chicago, 50c. to Milwaukee and 42½c. to Duluth, Fort William and Port Arthur.

The new Government order suppressing foreign statistics will make it impossible hereafter to give any figures in regard to coal shipments to Canadian ports.

DETROIT

Consumers of steam and domestic coal hold back orders looking for lower prices. Anthracite trade light. Lake shipments improve.

Bituminous—Because of uncertainty created among various steam coal users by reports from sources closely associated with the Federal Government, that a further reduction in price of bituminous coals would follow completion of the Government inquiry into cost of production, quite a number of the steam coal consumers are following a policy of waiting for cheaper coal. Though buying for current needs they are assisted in holding down the volume of business by the seasonable dullness now pervading in some of the manufacturing lines. Meantime they are delaying efforts to accumulate any excess supply for later requirements. It is the opinion of jobbers that the consumers are taking a greater risk than they realize. They are being told that the difficulties now met in getting delivery of coal, due to a railroad embargo and car shortage, are likely to be intensified quite materially in the next few weeks because of the extra demand for railroad equipment that will develop in preparations for war and in handling crops.

Temperature conditions are now such that domestic consumers appear to have lost appreciation of the importance of providing for their supplies. Their orders to retail dealers have diminished and the retailers, with some exceptions, have joined the group awaiting lower prices.

Anthracite—Though the quantity of anthracite coming into Detroit is not very large and only part of the retailers have put in stocks of any size, interest seems to be dormant. Reports that the Government probably would effect a reduction in price have caused retailers to hesitate about stocking up. They fear that should prices be reduced they would find themselves with stocks that they would have trouble distributing at a profit.

Lake Trade—Vessels employed in the iron-ore trade are meeting serious delay in discharging cargoes owing to scarcity of cars at unloading docks and are also losing much time because of fogs in the rivers connecting Lake routes. In consequence the supply of vessel capacity offered for moving coal is considerably reduced. Coal shipments, however, are gaining in volume, with a better movement from the mines, except from the Pittsburgh district.

TOLEDO

Large amount of Lake coal has accumulated. Schools and public institutions scouring the markets for next winter's supply.

The large users of steam coal are making strenuous efforts to secure a supply ahead of their immediate wants. Coal is not coming forward fast enough to satisfy the demands of the dealers and steam users who are anxious to fortify themselves against a possible shortage in the fall. On the other hand, some of the smaller dealers and steam users, who have sufficient stock on hand for their present needs, seem to feel they will have no trouble securing all the coal they want from now on because of the recent government investigation.

The market for steam coal is unsettled, some consumers having all they need and others barely enough to keep going. Schools and public institutions are trying to lay in a good supply of coal before Sept. 1. Small towns near-by are placing orders for domestic coal quite freely, most orders being for one and two cars for immediate delivery. Anthracite and Pocohontas grades are scarce. Small retail yards throughout the city are short of stocks in most cases, though a few are well supplied with all sizes. Dealers are urging their customers to put in a supply of coal now and are pointing out that in the fall when the Government starts moving troops and provisions cars and motive power will be short.

During the early part of the week the majority of railroads hauling Lake coal here had embargoes in effect owing to the large accumulation of coal awaiting shipment. The latter part of the week, however, saw the situation relieved. Lake men are working day and night to move all coal possible to the Northwest.

Prices on tons are as follows, f.o.b. mines:

	Mine run	Lump and Egg	Nut and Slack
Hocking & Pomeroy	$3.25	$3.75	$3.25
West Virginia Splint	3.25	3.75	3.25
Kentucky	3.25	3.75	3.25
Pocahontas	3.25	3.75	3.25

CLEVELAND

Proposed increase in railroad freight rates creates active buying on part of large consumers. No improvement in car supply. Eastern Ohio operators strictly observing agreement made with Government officials.

The fact that the Interstate Commerce Commission has granted the railroads permission to increase freight rates on coal, effective Aug. 29, has stimulated the local wholesale market and large consumers have been very active the past few days endeavoring to increase their supplies. On account of the poor car supplies at most of the Ohio mines, however, they have been able to buy only in small lots, 25 cars being about the limit most of the shippers dared to obligate themselves for. The car supply at most of the Ohio mines was even worse the past week than the week before, and scarcely any of the mines had more than 40 per cent. of their capacity.

The freight rate from the Pittsburgh No. 8 district to Cleveland will be increased 15c. per ton, making it $1.05, and as about 75 per cent. of the steam coal used in Cleveland comes from this district, it means a large increase in revenues for the coal-carrying railroads.

Notwithstanding the activity of large consumers to increase their shipments, prices have not been advanced by eastern Ohio operators as every one of them believes it his sacred duty to carry out to the letter the agreement made with Federal Government officials. One contract was closed for 30,000 tons Pittsburgh No. 8 three-quarter lump, to be shipped prior to Dec. 1, at $3.50 per net ton f.o.b. mine.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	$4.40	$3.90	$3.90
Cambridge	4.40	3.90	3.90
Middle Dist.	4.20	3.90	3.90
Hocking	4.40	3.90	3.90
Youghiogheny	4.65	4.15	4.15
Pittsburgh	4.65	4.15	4.15
Pocahontas		4.85	...
Fairmont	.....	.....	.....

COLUMBUS

Lake trade active and more steam buying is reported. Domestic market still quiet. Consumers loath to place orders under present conditions.

The most active feature of the market is the Lake traffic, which has now reached record stages. Loadings at the Toledo docks are unusually large as shippers are straining every point to supply the needs of the Northwest. The Hocking Valley Ry. loaded 232,000 tons last week at its Toledo docks and other roads showed high records.

Steam business, especially among the smaller users is not active, as many are waiting to see if the prices will not be reduced still further. They believe that the fixing of prices will insure a steady supply during the winter and they are apparently not worrying over the outlook. Efforts on the part of sales agents to have them stock up as an insurance against emergencies have not been successful, though the larger users are doing so.

The domestic trade is quiet as dealers have been unable to move their stocks of rather high-priced coal. Consumers are not concerned, believing that the 6,000,000 tonnage set aside by the Ohio clearing arrangements will take care of their wants. Dealers are trying to show their customers the dangers of the situation but so far little buying has resulted. Retail prices are rather unsteady and show a wide range. Pocahontas is scarce and prices continue rather strong. There is a scarcity of anthracite stocks also in central Ohio territory. West Virginia splints are selling fairly well.

The production in Ohio during the past week was almost a record one due to a good car supply. Reports from all of the mining districts show a large tonnage. Eastern Ohio is still suffering from lack of transportation facilities. The Hocking Valley and Pomeroy Bend produced almost 100 per cent.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$3.50	$3.50	.....
Inch and a quarter	3.50	3.50	$3.50
Three-quarter inch	3.00	3.00	3.00
Nut	3.00	3.00	3.00
Egg	3.00	3.00	.....
Mine run	3.00	3.00	3.00
Nut, pea and slack	3.00	3.00	3.00
Coarse slack	3.00	3.00	3.00

CINCINNATI

Market remains strong and relatively active, the Lake movement continuing in heavy volume. Car supply better, but the labor problem is becoming more acute.

In spite of the fact that consumers in general are holding off in the hope of lower prices for coal, the market maintains its firmness due largely to the continued heavy movement of coal to Northern markets via the Lakes. Production and shipments are at a heavier rate than at this time last year, and there is no room for complaint as to business among operators and their agents.

However, it is the general opinion that consumers here may find themselves disappointed if they wait too long, both in getting coal cheaper and in getting adequate supplies at any price, as stocks are not up to normal and demands from other quarters will undoubtedly continue. A remarkable feature of the season has been the limited amount of coal shipped by river, in spite of continuous high water, which has made it possible for boats to operate without interruption so far all summer. The spot market for steam coal is strong and active, as many consumers, finding themselves unable to secure contracts at satisfactory prices, are relying on the open market for their fuel.

LOUISVILLE

Government prices tend to depress the market. Large consumers declining to pay sales agencies 25c. commissions. Labor situation quiet.

Kentucky's coal trade is feeling the inevitable effect of the fixed prices. All selling organizations have slowed down, since there are no possibilities of realizing more than the fixed prices. Another feature of importance is that large industrial consumers are declining to purchase through selling organizations which exact the 25c. commission per ton. These purchasers are seeking to buy direct from mines and, in some cases are said to be undertaking outright purchase of mining properties or are contracting for outputs where possible.

Prospective advances in freight rates, authorized by the Interstate Commerce Commission, are causing considerable uneasiness, especially among the retail trade. Cars are rather well supplied and neither in western or eastern Kentucky have there been any noteworthy developments in the labor situation. The Kentucky trade is also watching the progress of the food control bill in Congress and there is much speculation as to whether an effective measure would not bring about a further reduction in the price of coal. Some demand from domestic consumers is developing and greater activity is expected during August. Operators with retail yards or connections are doing what they can to accumulate stocks.

Prices are without change: Eastern Kentucky lump and domestic sizes, $3.75; steam, $3.25. Western Kentucky, lump, $2.75; mine-run, $2.25@2.50; steam sizes, $2@2.25.

BIRMINGHAM, ALA.

Spot market quiet, with orders restricted to immediate needs. Some contract business being negotiated, though this is restricted to smal, tonnages. Quotations unchanged. Production off from 10 to 25 per cent. account labor disturbances.

The spot market continues to lag, inquiries being confined to current requirements of the consumers. The contract tonnage negotiated for during the past week amounted to considerable in the aggregate, the sales ranging from 5000 to 8000 tons for delivery over a period of six and twelve months, at $3 for the lower grades and $3.50 to $3.75 for the better grades of coal. Spot quotations are as follows per net ton mines: Big Seam and similar grades, $2.75@3; Carbon Hill, Corona and Pratt, $3.25@3.50; Cahaba and Black Creek, $3.75@4.

Consumers will likely continue to withhold inquiries to minimum requirements awaiting some definite news from governmental sources which will either lend official recognition to the prices agreed upon by the operators and coal committee or tend to indicate a further reduction.

Production at Alabama mines is off from 10 to 25 per cent., due to unrest and disaffection among the miners and mine labor stirred up by union organizers and agitators. This situation will likely be cleared within the next two weeks, as the United Mine Workers will have launched their fight for recognition within that time and it will be definitely known whether or not there will be a strike.

The car supply at the mines is good in most instances and little complaint is now heard on this score.

Coke

CONNELLSVILLE

Market rises again, car shortage being cause assigned. Price regulation under consideration.

The coke market has turned stronger again, after having declined since Independence Day. Car shortage is given as the cause, supplies this week being at such a rate as to indicate an average of 50 per cent. or thereabouts of the ratings. Supplies began to diminish about the middle of last week. After Independence Day there were frequently supplies in excess of the ability to make and load coke, and it appears that the railroads have accordingly taken the cars away. Naturally the operators do not complain as their profits are much larger on a restricted output than on a full output on account of the much higher price. If as now seems altogether probable the food bill as agreed upon in conference carries the provision empowering the President to fix coke prices the blast furnaces which are short of coke and have to pay such high prices will probably be heard from in Washington.

The Baltimore & Ohio's ruling that its cars cannot be consigned off its own rails, reported a week ago, remains in effect and will probably continue indefinitely, as has been the case with the P. & L. E.'s rule. The Pennsylvania is not seriously concerned with such matters as its rails reach the great majority of the consumers. Cars now seem to be about as short on one line as on another and there is no distinction in market price according to the owner of the equipment.

For a couple of days past spot furnace coke has ruled firm at $11@12, against $9.75@11 quoted a week ago, and operators have even paid $11 for coke to apply on their contracts. Foundry coke is quotable at $12.50@13.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended July 21 at 362,148 tons, an increase of 12,629 tons, and shipments at 374,042 tons, an increase of 25,041 tons.

Buffalo—Prices have declined some dollars, probably on account of the lower cost of coal and the excessive prices at which coke has sold lately. The consumption does not appear to be falling off. Jobbers quote 72-hr. foundry at not above $14, 48-hr. furnace at $12.50 and low grades and stock at $11, all per net ton, f.o.b. Buffalo. Receipts of iron ore at this port are very heavy and increasing so that vessels are detained some at one or two docks.

Birmingham, Ala.—Quotations on spot foundry coke have advanced to $16.50 per net ton ovens for high-grade product, and some sales have been reported at this figure. Contract prices range from $11.50 to $14. There has been no slackening in the demand in this district and a large volume of business has to be turned down each week on account of manufacturers being unable to supply the coke. Furnace coke is very hard to get and prices range from $6 to $8 per net ton ovens.

Middle Western

GENERAL REVIEW

Minor labor troubles and car shortage affecting production. There is a shortage of all grades, and demand by retailers and industrial concerns is unprecedented.

Shippers in the Mid-West are much concerned over reports from the Eastern coal-mining sections as to the unrest among the miners who are taking advantage of every pretex to start trouble and close down the mines. One entire producing section is threatened with a suspension of operations for a period of two to four weeks. In addition to this the car supply has been growing worse, Eastern mines securing on an average only 40 per cent. to 65 per cent. of full supply, and Indiana and Illinois mines an average of 10 per cent. to 15 per cent. less than a few weeks ago. Retailers are making every effort to stock their yards and at the same time to supply demands of householders, while industrial concerns are also making heavy purchases.

The Government maximum prices inaugurated some weeks ago are being fully maintained on all shipments not covered by contract, notwithstanding the shortage is so great that premium prices ranging from $1 to $3 per ton could easily be secured for certain grades of bituminous and anthracite. Operators are experiencing great difficulty in distributing shipments and find it impossible to satisfy all buyers.

There has been no gain in stocks of either anthracite or bituminous at the docks on Lake Superior and western Lake Michigan. Boat arrivals are not numerous enough to supply car loadings at the docks, and the concensus of opinion among dock operators is that Lake shipments during the remaining four months of navigation will be inadequate. In this case the mines of Illinois will be called upon to make up the bulk of the shortage, and the mines of Indiana, Iowa, Kentucky and Arkansas will have to supply the balance. Indiana and Illinois shippers are now receiving requests for shipments in dock territory hitherto not supplied by these operations.

CHICAGO

Very light stock of coal carried by Chicago retailers. Demand is keen and car shortage becoming more acute.

Illinois coal operators held a conference this week with the Illinois Council of Defense. Some members of the council, naturally, are not well informed regarding coal, and were determined to consider the price as the main issue, while the coal operators contended that "increasing the supply" was the first consideration. The whole matter was referred to the entire state council for further consideration at a meeting held July 31. The operators' committee have, so far, refused to make a statement.

Anthracite shipments to the Chicago market have been almost at a standstill, there has been less movement of all-rail and boat shipments the past week than at any time since the opening of navigation. Retail stocks are practically depleted and shippers and retailers are alike disturbed over the question and are asking how the trade is to be supplied.

Franklin County bookings continue far in excess of available shipments. With car supply averaging less than 65 per cent. and orders calling for immediate shipment that will keep the mines busy for the ensuing thirty days, no anxiety is being felt relative to the demand, but there is more or less anxiety among operators regarding car supply and labor. The situation is critical to say the least and what is still more aggravating is that those who are trying to regulate the matter, are concerning themselves solely with the prices and ignoring the question of cars and the supply. There has been no change in prices on anv of the grades.

In Williamson County the situation is much the same as in Franklin County, except that the car supply has been poorer. The mines are oversold for two to three weeks. This is also true of Saline County where car supply has been so inadequate that very few of the contract obligations were taken care of, and no free coal was to be had. The Government maximum prices rule.

The Springfield district mines have had a poor car supply, and as a result prices have been strengthened considerably. Very little free coal, after contract obligations were taken care of, has been available.

The Fulton and Peoria County mines have been notified by the Burlington Ry., that car supply will be decreased. Naturally shipments will be curtailed considerably inasmuch as this road serves a majority of the mines in these two counties. The free coal available has commanded prices ranging from 25 to 50c. higher than last week.

The Indiana mines reported very poor car supply the first part of the week. None of the mines are taking on any new business for immediate shipment. The territory formerly served exclusively by the dock operators of the State of Michigan has been drawing heavily on the Indiana mines.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Spring-field	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carter-ville
Domestic lump	$3.25@3.50	$3.25@3.50	$3.50	$3.00@3.25	$3.50
Steam lump	3.00	3.00@3.25	3.25	2.75@3.00	3.25
Egg	3.25@3.50	3.25@3.50	3.50	3.00@3.25	3.50
Nut	3.25@3.50	3.25@3.50	3.50	3.00@3.25	3.50
Mine-run	2.60@2.75	2.60@2.75	2.75	2.50@2.75	2.75
Screenings	2.25@2.50	2.25@2.50	2.25@2.50	2.00@2.25	2.75

	Williamson and Franklin Cos.	Saline and Harris-burg	Poca. and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump	$3.50	$3.50	$3.75	$3.75	$3.75
Egg	3.50	3.50	3.75	3.75	3.75
Nut	3.50	3.50	.....	.....	3.75
No. 1 nut	3.50	3.50	.....	.....	.....
No. 2 nut	3.50	3.50	.....	.....	.....
No. 3 nut	3.50	3.50	.....	.....	.....
No. 1 washed	3.50	3.50	.....	.....	.....
No. 2 washed	3.50	3.50	.....	.....	.....
Mine-run	2.75	2.75	3.25	3.25	3.25
Screenings	2.75	2.75	.....	.....	.....

Hocking Lump $3.75 Split Lump $3.75

Prices are very firm with no change reported in the recent Government maximum quotations in effect the past few weeks.

Pocahontas coal is as scarce in the Chicago market as anthracite, and the demand has been heavier especially by apartment owners. Stocks are practically depleted and retailers are arranging to substitute the better grades of Illinois coal. The agencies give no promise of shipments arriving in sufficient quantities to satisfy the demand; on the contrary, they are pointing out the fact, that outside of Government requirements the East will in all probability take most of the coal available.

Upper Lake demand and other markets nearer the mines in the Hocking and Kanawha fields are preventing much of these coals reaching Chicago. Embargoes have also limited shipments.

The demand for eastern Kentucky has been unusually heavy and shipments have been very light. The Louisville & Nashville Ry. have restricted the movement of hopper bottom cars to points south of the Ohio River. Maximum prices are in effect on both steam and domestic sizes.

ST. LOUIS

Unusually slow market and conditions very much upset. Shortage of Standard and Mt. Olive coals, and an over supply of Williamson and Franklin County prevails. Country business is slow, and domestic trade paralyzed. Car supply shows slight improvement.

The Standard field is pretty well sold up on railroad business and has very little coal to offer as a rule, although it is easier with the close of the week than it was at the beginning. Such domestic coal as is being bought now is largely of this grade. The market has remained steady on this coal for the past week and unless the supply is more abundant, there will be no break.

In the Mt. Olive district conditions are somewhat different, inasmuch as the mines are from two to three weeks behind on shipments. The railroad tonnage in this field still continues heavy, and supply of equipment for domestic is exceptionally scarce. In view of this, the operators still take care of their trade in the St. Louis market at the $3.25 price on the different sizes, while the price to the outside trade is $2.50 and $2.75 and country shipments bring as high as $3.25.

In the Williamson and Franklin County field there is an over-supply of coal as far as this market is concerned and some very good grades have been sold as low as $3 at the mine, while the circular continues at $3.50. All sizes seem to be plentiful in this field and in some sections it is being quoted as low as $3.15 and $3.25. The country demand has fallen off and there seems to be an unusual slowness in the South, where a few weeks ago buying was brisk.

The movement of coal to the north and northwest through this gateway is not in the volume that might be expected. There seems to be an expectancy on the part of the consumer that the Government is going to do something to regulate the price of coal and bring it down between now and the first of September, and the general public everywhere in this section is patiently waiting for some decision. In the State of Missouri, with its drastic antitrust laws, the chances are that some state action will be taken if the Government fails to act. There is considerable agitation in the newspapers throughout the state, protesting over the present prices and contending that $2.50 should be the maximum at the mine for these coals, graded down to $2 for the Standard product.

There has been a slight improvement in the equipment supply on some of the roads this week, especially on the M. & O. and some of the other roads in the Standard field, where 50 per cent. working time was given.

In the past week very little Eastern coal of any kind moved in, and Arkansas has almost stopped. The dealers here will not handle Arkansas if they can help it, and the public is very much opposed to purchasing on account of the unusual stand taken by the producers of that coal in arbitrarily raising the price without cause, and on account of the publicity given to their action through the press.

In a general way conditions are very unsettled, and a continued depression such as exists now bespeaks much trouble when the public have got to have coal.

The prevailing price per net ton f.o.b. mines is:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump	$3.25@3.50	$2.35@3.00	$2.50@3.00
3x6-in. egg	3.25@3.50	2.35@3.00	2.50@3.00
2x3-in. nut	3.25@3.50	2.35@3.00	2.50@3.00
No. 2 nut	3.25@3.50	.....	.....
No. 3 nut	3.00@3.25	.....	.....
No. 4 nut	3.00	.....	.....
No. 5 nut	2.50	.....	.....
2-in. screen	2.50	2.25	2.00@2.15
2-in. lump	.....	.....	2.25@2.40
3-in. lump	.....	2.25@2.75	.....
Steam egg	3.00	2.25@2.75	2.25
Mine run	2.50@2.75	2.50	2.00@2.25
Washed			
No. 1	3.50	3.00@3.25	.....
No. 2	3.25	3.00@3.25	.....
No. 3	3.25	.....	.....
No. 4	3.00	.....	.....
No. 5	2.50	.....	.....

Williamson and Franklin County rate is 87½c. Other fields 72½c.

General Statistics

IMPORTS AND EXPORTS

The following is a comparative statement of coal imports and exports of the United States for April, 1916-17, and for the 10 months ended April, 1916-16-17, in long tons:

	May		11 Months		
IMPORTS	1916	1917	1915	1916	1917
Anthracite, total	.....	105	12,336	7,199	1,678
Bituminous total	109,041	71,638	1,310,889	1,517,498	1,205,768
United Kingdom	504	27	33,919	8,175	6,358
Canada	106,973	69,596	1,036,295	1,351,632	1,109,206
Japan	1,050	.....	77	71,450	59,696
Australia	514	1,335	160,767	84,545	28,158
Other countries	.....	680	2,248	1,696	2,350
Coke	5,286	1,225	83,973	56,333	23,646
EXPORTS					
Anthracite total	450,785	429,187	3,329,552	3,364,044	4,033,139
Canada	442,508	420,873	3,269,000	3,242,597	3,954,149
Argentina	.....	22	.....	2,926	2,706
Brazil	1	168	.....	2,473	1,723
Uruguay	.....	.....	60,552	600	200
Other countries	8,276	8,124	.....	115,448	74,361
Bituminous total	1,980,100	1,830,389	12,479,388	16,684,175	17,241,894
Italy	160,465	41,139	1,245,260	2,966,538	1,040,992
Canada	1,310,026	1,401,158	7,551,864	9,174,849	11,191,088
Panama	48,030	45,111	295,664	445,630	482,412
Mexico	14,156	12,484	369,166	198,093	179,364
Cuba	115,427	153,750	990,222	1,134,815	1,330,631
Other West Indies and Bermuda	44,229	41,561	413,486	539,205	455,888
Argentina	100,583	23,888	406,058	676,670	689,722
Brazil	107,087	44,281	404,780	617,458	660,552
Uruguay	10,278	1,329	91,671	117,505	99,808
Other countries	69,819	65,688	711,414	1,213,412	1,111,437
Total coal	2,430,885	2,259,576	15,809,137	20,048,219	21,275,033
Coke	91,147	134,091	533,845	886,563	1,017,876
Bunker coal	741,167	629,010	6,334,763	6,819,751	7,101,767

MILWAUKEE

Coal coming forward very slowly, with less on the docks than in many years past.

Coal receipts continue unsatisfactorily slow, and unless there is a speeding up of arrivals from now on to the close of navigation the probability is the coming winter will witness strenuous times for both dealer and consumer. There is less coal on the docks on the 1st of August than has been the case at the same time in many years, and the drain upon stocks is steady. Anthracite is absorbed as fast as it is received. One cargo of nearly 8000 tons which arrived during the week never reached a dock, but was unloaded directly into railway cars for transportation to the interior.

Three large dock yards have not received a pound of coal as yet, viz.: Philadelphia & Reading Co., Kanawha Fuel Co. and Central Coal Co. The former is completing a new concrete dock and repairing hoists. The Central Coal Co. has apparently abandoned Lake coal for the season and is stocking up with Illinois coal received by rail. This company supplies the Milwaukee road with fuel.

It is beginning to dawn upon many that the most that can be expected from the Government is the speeding up of transportation facilities and that there will be no reduction in present prices. This does not mean that the public is satisfied that prevailing prices are right. Private consumers accept the situation stoically, but those who require large amount are loud in denunciation of the demands of dealers. Milwaukee County's poor office recently advertised for bids for next winter's supply of coal and only received one response, which was turned down by the board of administration. Illinois lump coal, which last year cost the county $6 per ton, was offered at $9.50. Unscreened Pocahontas, which cost $3.75 last year, was offered at $7.50, and wood which cost $8.50 per cord in 1916 is held at $14.50.

PENNSYLVANIA RAILROAD

Statement of coal and coke carried on Pennsylvania Railroad Co.'s lines east of Pittsburgh and Erie for the month and period ended June 30, 1917, in short tons:

	June, 1917	Increase or Decrease	Jan. 1 to June 30, 1917	Increase or Decrease
Anthracite	958,286	+50,394	5,667,026	—193,015
Bituminous	4,558,953	+814,306	26,311,966	+2,042,829
Coke	1,009,045	—180,557	6,097,798	—1,253,995
Total	6,526,284	+684,143	38,076,790	+595,819

LAKE SHIPMENTS

Total fuel shipments through the Sault Ste. Marie Canal for June were: Anthracite, 327,146 tons; bituminous, 1,796,418 tons.

I. C. C. Decisions

No. 8715. P. Healey vs. Chesapeake & Ohio Railway. Submitted Aug. 1, 1916. Decided May 12, 1917.

Carload shipment of coke from Sewell, W. Va., to Evansville, Ind., found not to have been misrouted and complaint dismissed.

Financial Department

Pond Creek Coal Co.

Pres. T. B. Davis, N. Y., Mar., 1917, reported for the year ending Dec. 31, 1916, as follows:

Production—The mines have been operated continuously and the production of coal for the year amounted to 942,951 tons (against 753,798 tons in 1915, 690,653 tons in 1914 and 566,965 tons in 1913). That the increase is not greater was due to causes not entirely within the company's control, principally the inability to obtain sufficient labor to increase the output of the mines to the capacity for which they have now been developed. Also during the last quarter the output was very seriously affected by the railroad traffic congestion which produced a car shortage all through the country, and will tend to curtail the natural increase in the output for year 1917 unless conditions materially improve.

Results—The profits for 1916 before depreciation amounted to $225,409, against a deficit for 1915 of $22,318, making an increase of $247,727 in the profits before depreciation for year 1916 over those of 1915.

Coal Sales Prices—Coal sales prices have been satisfactory during the whole of the year, especially so during the last quarter, although the full benefit of the higher prices was not felt until contracts which were uncompleted at the end of the previous year had been fulfilled.

In order to increase the coal output two new mines were opened up and both are now producing a satisfactory amount of coal for the stage of development they have reached.

Bonus—In December, 1916, the company paid a bonus equal to one month's salary to all salaried officers and employees, partly to compensate them for the higher costs of items entering into their living expenses.

Additions to Capital Account—Additions to capital account amount to $74,868 and consist principally of the cost of opening up two new mines, and the addition to equipment of five electric gathering locomotives, five mining machines, six mine pumps and other additions.

Bonds Purchased—During the year opportunities to purchase the company's bonds at favorable prices presented themselves from time to time and there were purchased in all for the company $254,000 of these bonds which are being held as investments and can be sold at any time it seems desirable to increase the company's working capital.

Depreciation—It was decided to set aside to depreciation fund $25,409, representing about 2½ cents per ton of coal produced, and it is the intention to make additions to the depreciation fund at the rate of 6 cents per ton beginning Jan. 1, 1917.

Outlook—The outlook for year 1917 is one of continued prosperity, several important contracts having already been closed at prices that should insure a large profit, and the indications are that it will be by far the best year in the company's history.

INCOME ACCOUNT FOR YEARS ENDING DECEMBER 31

	1916	1915	1914
Gross earnings	$362,887	$104,017	$104,137
Net earnings	326,734	80,504	80,497
Other income	12,793	17,178	20,047
Gross income	$339,526	$97,682	$100,544
Depreciation	25,409	.....	.....
Bond interest	$114,117	$120,000	$120,000
Balance, surplus or deficit	sur.$200,000	def.$22,318	def.$19,456

Union Collieries Co.

In connection with a recent bond issue by this company the following statement concerning its properties was made:

These bonds are a closed first mortgage on about 5000 contiguous acres of thick vein Freeport coal, 160 acres of Pittsburgh gas coal, 150 acres of surface land, including all improvements thereon, to be made, and after acquired property; pledge of all the shares, except directors' shares, of the capital stock of the Unity Railways Co., which has no mortgage debt. Shares may be withdrawn when the outstanding bonds are reduced to $600,000. Value of the above properties in Feb., 1916 in excess of $2,450,000 on a most conservative basis. Practically the entire proceeds of this issue have been expended on the Unity Railways.

Properties—Within 15 miles of Pittsburgh and 4.2 miles of the Bessemer & Lake Erie R.R., with which a connection is made through the Unity Railways. Net recoverable tonnage from the upper Pittsburgh seam, measuring 6 ft. in thickness, about 1,000,000 tons, and from the lower Freeport, more than 7 ft. thickness, 48,440,000 tons.

The company is equipped with two tipples and openings into the upper Pittsburgh coal with minimum daily capacity of 2000 tons (now shipping at the rate of about 1500 tons per day); tipple and shafts to the lower Freeport coal together with adequate modern equipment designed for a capacity of about 1,000,000 tons per annum, ready for operation about June 1, 1917, making a total ultimate annual capacity of 1,500,000 tons from the three mines.

Earnings—Estimated net earnings were placed at an average of $356,000 net per annum over the first three years commencing Mar. 1, 1917, but due to advanced prices net earnings for the 9 months commencing Apr. 1, 1917, it is expected, will exceed $400,000.

Management—Pres., W. W. Keefer, Pres. Pittsburgh Ter. R.R. & Coal Co. and Bessemer Coal & Coke Co.; Sec. & Treas., E. M. Love, Sec. & Treas. of Bessemer Coal & Coke Co.

New River Co.

This company reports for the year ended Mar. 31, 1917, as follows:

The production of the subsidiary companies for the year ended Mar. 31, 1917, amounted to 2,168,084 gross tons, or 2,428,084 net tons, an increase over 1915-16 of 274,268 gross tons, the largest production in any single year in the history of the company. The earnings were sufficient to pay the interest on all outstanding bonds, and left, in addition, a profit of $505,650.

Early in the fiscal year coal was something of a drug on the market, and it was not until August, 1916 that the demand became equal to the supply. By September it began to exceed the supply, and from that time forward the supply was wholly inadequate. While our production for the year was the best in the history of the company, it could have been further increased by at least 425,000 tons, if adequate labor and a full car supply had been available.

Practically all of our second-hand equipment has been disposed of, realizing over $114,000, or about $40,000 more than we had expected. Our properties, moreover, were equipped with electrical machinery at a time when the cost was practically the lowest in our experience.

OUTPUT AND EARNINGS OF SUBSIDIARY COMPANIES AND AMOUNTS THEREOF BELONGING TO NEW RIVER CO., YEARS ENDING MARCH 31

	Output (Tons) 1916-17	Output (Tons) 1915-16	Total Net Profits 1916-17	Total Net Profits 1915-16
White Oak Fuel Co	509,620	431,514	$93,749	loss$553,09
New River Fuel Co	.....	.....	.....	4,184
Collins Colliery Co	125,007	86,382	50,088	13,960
Macdonald Colliery Co	68,352	60,589	13,738	542
Cranberry Fuel Co	338,775	276,927	68,618	1,985
Dunn Loop Coal & Coke Co	218,162	259,078	104,873	95,978
Harvey Coal & Coke Co	242,688	219,422	99,924	62,206
Beckley Coal & Coke Co	123,209	100,880	7,192	loss 10,600
Prudence Coal Co	170,201	134,737	55,082	3,641
Mabscott Coal & Coke Co	92,540	85,501	25,880	13,263
Price Hill Fuel Co	.....	.....	.....	loss 4,198
Stuart Colliery Co	279,530	238,786	12,051	loss 46,107
Great Kanawha Collieries Co	.....	.....	16	loss 540
White Oak Coal Co	.....	.....	83,370	37,025
White Oak Railway Co	.....	.....	2,778	1,112
Piney River & Paint Creek R.R	.....	.....	15,766	14,875
Total	$2,168,084	$1,893,816	$633,125	$132,017
	1916-17	1915-16	1914-15	1913-14
New River Co. proportion of profit of oper. cos., net	$629,186	$119,383	$127,174	$46,255
New River Co. losses for year	123,536	100,780	109,636	103,677
New River Co., net gain or loss (see text above)	gain$505,650	gain$18,602	gain$17,538	loss$57,422

There was charged off for depreciation $94,083 in 1916-17, against $82,438 in 1915-16, $75,226 in 1914-15 and $57,445 in 1913-14.

NEW RIVER CO.—BALANCE SHEET MARCH 31 (SEE TEXT AS TO CAPITAL STOCK)

Assets	1917	1916	Liabilities	1917	1916
Inv. in sub. cos	$13,402,223	$13,333,143	Common stock	$4,449,800	$4,449,800
Properties and rights owned in fee	1,476,900	1,473,929	Preferred stock	9,037,400	9,037,400
Treasury stock	1,709,225	1,650,900	Bonds outstanding	3,742,000	3,797,000
Sundry investments	34,940	25,513	Notes payable	548,078	396,094
Cash and accounts rec	29,918	8,760	Accrued interest	46,543	45,567
Notes receivable	28,672	232,672	Accrued taxes	15,006	4,163
Bonds in treasury	2,000	81,000	Miscell. items	48,743	42,009
Miscellaneous	57,570	42,200	Deprec'n reserve	14,760	11,184
Loanstosub. cos	q,790,313	1,668,529	Accounts payable	8,702	604
			Profit and loss, surp	620,730	732,825
Total	$18,531,761	$18,516,645	Total	$18,531,761	$18,516,645

CONSOLIDATED BALANCE SHEET OF SUBSIDIARY COMPANIES MARCH 31

Assets	1917	1916	Liabilities	1917	1916
Plant	a$5,912,340	$6,520,877	Capital stock	$5,421,600	$,745,400
Inter-co. receivables	1,632,437	1,309,965	Due New River Co	1,972,417	1,832,074
Mdse., feed, furn., etc	459,426	399,430	Inter-co. payables	1,632,437	1,309,965
Accounts receivable	620,145	345,702	Accounts payable	301,971	394,585
Notes receivable	9,984	13,531	Notes payable	68,672	158,862
Due from New R. Co	182,104	163,546	Pay-rolls	63,720	64,212
Cash	168,620	35,565	Miscellaneous	82,204	72,808
Coal in transit	81,337	76,917	Surplus	30,218	.....
Miscellaneous	506,845	229,525			
Deficit	.....	482,933			
Total	$9,573,237	$9,577,905	Total	$9,573,238	$9,577,905